



# **State Long-Range Transportation Plan 2005-2030**

## **Corridors and International Borders Report**

*Prepared for  
The Michigan Department  
of Transportation  
March 1, 2007*

*Prepared by*



**Wilbur Smith Associates**

**MI Transportation**

MICHIGAN LONG RANGE TRANSPORTATION PLAN



## Table of Contents

Chapter 1. Introduction.....	1
1.1 Overview of this Report.....	1
1.2 MDOT’s Role in Michigan’s Economic Growth and Competitiveness .....	2
1.3 Integrating the Corridor Approach with <i>MI Transportation Plan</i> .....	3
Chapter 2. Process to Identify Corridors and Activity Centers.....	4
2.1 Definitions .....	4
2.1.1 Activity Centers.....	4
2.1.2 Corridors of Highest Significance .....	4
2.1.3 Regionally and Locally Significant Corridors .....	5
2.2 Corridor Subcommittee, Peer State Reviews, and MDOT Regions Listening Session.....	5
2.3 Analytical Approaches .....	6
2.3.1 Replicating Previous Approach .....	6
2.3.2 Activity Center Approach. ....	6
2.3.3 Resulting Activity Centers and Corridors .....	8
2.4 Corridor Nomenclature.....	10
Chapter 3. Corridors of Highest Significance .....	11
3.1 MDOT’s Corridors of Highest Significance vs. Statewide Transportation System .....	16
3.2 Significance of Designation as MDOT “Corridor of Highest Significance” .....	20
3.2.1 Corridor Management Policies . ....	21
3.2.2 Operational Policy Options for Consideration . ....	23
3.2.3 Investment Policy Options for Consideration .....	25
3.3 MDOT “Corridor of Highest Significance” Profile Summary .....	25
3.4 Broad Policy-Based Corridor Strategies.....	26
Chapter 4. Performance Measures .....	26
4.1 Performance Measures .....	27
4.2 Goals, Objectives, and Performance Measure Rationale .....	28
4.3 Integrating Performance Measures and Strategies.....	29
Chapter 5. International Border Crossings and Issues .....	30
5.1 MDOT’s Vision and Policy for its International Border Crossings.....	31
5.2 Michigan’s International Border Crossings.....	33
5.2.1 Value at Crossings .....	34
5.2.2 Volumes at Crossings .....	38
5.2.3 Changes in Volumes and Value at Crossings .....	39
5.2.4 Aviation Crossings .....	40
5.2.5 Ferry Crossings .....	41
5.3 Issues .....	41
5.3.1 Capacity, Congestion and Delays .....	41
5.3.2 Homeland Security .....	42
5.3.3 Physical Conditions of Infrastructure .....	42
5.3.4 Intergovernmental Challenges .....	42

5.4 Physical Conditions and Needs .....	43
5.4.1 International Bridge .....	43
5.4.2 Blue Water Bridge .....	43
5.4.3 Ambassador Bridge and Detroit-Windsor Tunnel .....	44
5.5 MDOT's Border Strategies, Initiatives, and Investments .....	44
5.5.1 MDOT International Border Crossing Strategy and Action Plan .....	44
5.5.2 Past Investments and On-going Initiatives .....	45
5.5.3 US/Canada Discussions and Policy Initiatives .....	47
5.5.4 Proposed Investments 2005 - 2030 .....	48
5.5.5 Aviation Strategies, Issues, and Initiatives .....	49
5.6 Homeland Security Strategies, Initiatives, and Issues .....	50
5.6.1 Initiatives .....	50
5.6.2 Maritime Initiatives .....	51
5.6.3 Information Technology Initiatives .....	51
Chapter 6. Conclusions and Next Steps. ....	52
6.1 Significance of being a Corridor of Highest Significance .....	52
6.2 Performance Measures .....	52
6.3 Strategies, Policies, and Programs .....	53
6.4 Corridor Plans .....	53

## List of Tables

Table 1: Activity Center Criteria and Data .....	7
Table 2: Comparisons – Existing Statewide Infrastructure Totals to Corridors of Highest Significance including International Border Crossings .....	17
Table 3: Comparison of corridor values based on some of the characteristics used to define each corridor's value .....	19
Table 4: Performance Measures and Criteria .....	27
Table 5: Corridor-specific Goals, Objectives, and Rationale .....	29
Table 6: International Border Crossings and Ports of Entry .....	34
Table 7: US – Canada – Mexico – Michigan Trade (in Billion \$) .....	37
Table 8: US – Canada Border Crossings and 2005 Volumes .....	38
Table 9: Annual Volumes .....	39
Table 10: Border Crossing and Supporting Corridors Investments 1995 - 2005 .....	46

## List of Figures

Figure 1: Activity Center and International Border Crossings.....	9
Figure 2: Corridors of Highest Significance and International Border Crossings .....	10
Figure 3: Regional/National Corridors of Highest Significance .....	15
Figure 4: Lettered Corridors of Highest Significance .....	16
Figure 5: Population within a 20-mile geographic area around the Corridors of Highest Significance .....	18
Figure 6: US Canada Exports and Imports.....	35
Figure 7: 1999 Weekly Truck Trips Crossing US / Canada Border .....	36

## Executive Summaries - Companion Documents

*MI Corridors of Highest Significance Profile Summary – Executive Summary I*  
*Economic Regions Corridor Summary – Executive Summary II*

## Appendices

Appendix A - References .....	A-1
Appendix B - Process to Identify Corridors and Activity Centers.....	B-1
Appendix C - Activity Center Profiles .....	C-1
Appendix D - Corridor Strategies and Compatibility Screening .....	D-1

## Executive Summary

Michigan's 2030 integrated transportation system will be the foundation of the state's economic vitality and will sustain quality of life for its residents. In order to safely and efficiently support the movement of people, goods, and services, the Michigan Department of Transportation (MDOT) recognizes that passengers and freight travel must pass seamlessly along geographic corridors on multiple modes between locations or activity centers both within and outside Michigan. The decision to conduct a corridor-based analysis is grounded in the belief that specific corridors serve and support specific economic sectors. By improving specific corridors the people, businesses and industries dependent on these corridors will be strengthened as will ultimately Michigan's economic competitiveness.

This *Corridors and International Borders Report* summarizes this integrated, multi-modal journey of people, goods and services which occurs on a daily basis along the 19 Corridors of Highest Significance within the state of Michigan. This report defines these corridor's value to the state's economy and it evaluates the travel conditions and needs, describes objectives, and suggests broad, policy-based strategies to take advantage of economic opportunities or address transportation deficiencies. It also describes Michigan's International Border Crossings and the issues that may impact international travel and the global competitiveness of Michigan.

This report also includes two separate executive summary reports. The first report entitled *MI Corridors of Highest Significance Profile Summary – Executive Summary Report I* provides a detailed corridor profile for each of the 19 Corridors of Highest Significance. This corridor profile document also presents a summary of opportunities and missing or deficient links in existing and future multi-modal systems that hinder the movement of goods and services traveling in or through each corridor. The second executive summary is organized by the *MI Transportation Plan's* 17 Economic Regions. The *Economic Regions Corridor Summary – Executive Summary Report II* document presents brief economic and corridor profiles and key strategies for the Corridors of Highest Significance within each of the *MI Transportation Plan* Economic Regions.

**Corridor Identification:** Selection and agreement on the MDOT Corridors of Highest Significance involved a data rich, analytical process that included considerable review and discussion by a *MI Transportation Plan* corridor subcommittee comprised of individuals from throughout the department. MDOT utilized an activity-based approach to identify its highest corridors of significance. *MI Transportation Plan's* activity centers, as discussed in this report, are:

*Geographic locations with concentrations of people, jobs, educational and health service facilities, tourist attractions, or other similar economic-based facilities or services. International border crossings are included within some activity centers.*

A total of 50 activity centers were identified within Michigan plus six outside of Michigan. MDOT then developed a process to connect these activity centers. This grouping of activity centers was accomplished by identifying concentrations of activity within the state and then connecting these centers via various modes. These desired connections were then labeled as



corridors and defined as either a Corridor of Highest Significance or Regionally or Locally Significant Corridors. *MI Transportation Plan's* Corridors of Highest Significance are defined as:

*An integrated, multi-modal system of transportation infrastructure along geographic corridors that provide a high level of support for the international, national, and state economies. These corridors connect activity centers within and outside Michigan and serve the movements of people, services, and goods vital to the economic prosperity of the state.*

“Regionally and Locally Significant Corridors,” are defined as:

*An integrated, multi-modal system of transportation infrastructure along geographic corridors that provide a high level of support for a specific sub-state region of Michigan's economy. These corridors connect to and augment the Corridors of Highest Significance and serve the movements of people and goods within or between activity centers.*

The map below identifies the selected activity centers and the corridors of significance.



Source: Wilbur Smith Associates, 2006.

**Policy Considerations:** Because of their value and importance to Michigan’s current and future economic health and competitiveness, MDOT will implement specific policies to guide management, operational, and investment decisions relative to transportation facilities within the MDOT Corridors of Highest Significance service areas. During the implementation phase of the *MI Transportation Plan*, the following policies and strategies will be applied to the Corridors of Highest Significance. The overall goal for these corridor policies is to guide MDOT in making the right business decisions to make or keep these integrated multi-modal corridors and the economic regions which they connect economically competitive.

- **Leadership in Coordination:** MDOT will continue to take a leadership role in transportation issues statewide by developing and facilitating partnerships to ensure transportation system deficiencies along these corridors are minimized.
- **Innovative Partnerships and Programs:** MDOT will continue to actively seek and support partnerships with the Federal Highway Administration (FHWA), local governments, Metropolitan Planning Organizations (MPOs), Regional Planning Agencies (RPA’s), and businesses to identify and advance innovative, multi-modal programs, financing, and solutions that may improve safety, mobility, and economic competitiveness within the Corridors of Highest Significance.
- **Minimizing Construction Impacts:** MDOT will continue to apply innovative and specialized construction methods, for all transportation facility construction projects on Corridors of Highest Significance in order to minimize impacts to the traveling public.
- **System Maintenance:** MDOT will continue its leadership role, in coordination with its transportation partners, to ensure that adequate maintenance levels are achieved statewide across all modes of the transportation system to protect the public’s investment for the future.
- **Corridor Completion:** MDOT will strive to address missing or deficient links and gaps within all Corridors of Highest Significance to produce a corridor of uniformly high quality throughout its length.
- **Corridor Plans:** Specific corridor-based plans and strategies will be initiated for strategic portions of National Corridors of Highest Significance that have immediate or near-term system condition needs. Each corridor-specific plan will provide a master plan to guide implementation of such improvements.
- **Access Management:** MDOT will continue to work with local governments to implement Access Management, TDM, and TSM programs along the non-limited access Corridors of Highest Significance. MDOT will also continue to partner with its local officials to uphold access management principles by cooperatively reviewing development plans and driveway permit applications.
- **Carpool or Park and Ride:** MDOT will continue to evaluate, construct and or expand, as warranted, carpool or park and ride lots within the corridors.

- **Roadside Facilities Strategy:** Roadside facilities such as rest areas, welcome centers, and roadside parks provide an added amenity along Corridors of Highest Significance and will be maintained in such a manner that citizens of the state can be proud of them.
- **Systemwide Operational Plans:** MDOT will develop its programs in a manner that seeks to maximize efficient transportation system expenditures. For example MDOT will continue to participate in the Regional Concept for Transportation Operations (RCTO). A RCTO is the collaboration and coordination between transportation system managers responsible for operating the transportation system on a day-to-day basis.
- **Intelligent Transportation Systems (ITS):** MDOT will work to implement multi-modal ITS technology within all Corridors of Highest Significance.
- **Reduce Delays:** MDOT will work to minimize disruption to mobility from incidents, construction, and recurring congestion along Corridors of Highest Significance by developing and applying corridor-specific operational improvement strategies.
- **Priority:** In its project prioritization, programming, and funding, MDOT will give priority to needed improvements to all modal facilities along the Corridors of Highest Significance.
- **Planning Funding set-asides:** MDOT will annually assess whether SPR funds can be utilized to implement MDOT sponsored corridor planning studies and innovative programs to address safety, access, choices, integration, or mobility on its Corridors of Highest Significance.
- **Innovative Financing:** MDOT will routinely identify, consider, and seek innovative funding and financing (such as public-private partnerships) for major projects along the Corridors of Highest Significance.
- **Indexing Investment Strategies:** To ensure Michigan is best positioned to compete in a global economic environment, MDOT will develop an indexed investment strategy.

**Conclusions and Next Steps:** The economic vitality of each of Michigan's unique economic regions is linked to the quality of its transportation system. This report is only an initial step in identifying and implementing the best strategies, policies, programs, and priorities to address the issues and conditions identified within the *MI Corridors of Highest Significance Profile Summary* and the *Economic Regions Corridor Summary*.

The *MI Transportation Plan* provides concepts and principles for the decisions needed to realize the vision of a fully integrated system. The beneficiaries of an integrated system are Michigan's people and businesses, who will use the integrated system to achieve their greatest human and economic potential with greater freedom from the barriers to safety, mobility, and sustainability. For example, corridors within the majority of MDOT's Metro Region and several other urbanized core cities are part of a complex interdependent freeway and non-freeway system. Often planning along a single corridor does not adequately address the needs of these complex systems. Since the network of both freeway and non-freeway needs must work together, particularly for maintenance of traffic requirements that are demanded by the public,



a network analysis is often the most applicable approach to the development and identification of strategies and infrastructure improvements. It should also be noted that network analysis will need to continually evolve due to the varied implementation schedules of programs, changing travel patterns, and construction associated within these urbanized areas.

Improvements to specific corridors serving particular economic sectors, however, will improve Michigan's economic competitiveness. A corridor-based analysis allows for the development of a vision with specific goals for achieving the vision within the area. An examination of the areas allows MDOT to pinpoint any bottlenecks, gaps, or obstacles to identify remedies, in order to provide functional and efficient movements throughout the transportation network. It follows that improvements to specific corridors serving particular economic sectors can improve Michigan's economic competitiveness.

In-depth corridor studies and network analysis will be conducted and corridor plans developed for strategic Corridors of Highest Significance. The studies will identify the primary industrial sectors supported by the corridor and identify their industry-specific transportation needs. The plans will:

- A. Present a detailed set of programs, policies, and projects needed to improve the economic competitiveness of each corridor.
- B. Address corridor opportunities, freight adequacy, barriers, gaps, and missing links.
- C. Present a prioritized list of projects, ideas and programs needed for funding and partnerships, while addressing both financial and operational needs for each corridor.

## Chapter 1. Introduction

This *Corridors and International Borders Report* provides supporting documentation and analysis for *MI Transportation Plan*. Unlike the technical reports prepared as part of the plan that focus on a single issue or mode, this report provides a unique perspective. It presents an integrated, multi-modal analysis of the journey of people and the supply chain movements of goods along 19 Corridors of Highest Significance. This report defines these corridors and their value to Michigan. It evaluates the travel conditions and needs on each corridor by identifying opportunities and barriers to movement such as gaps or missing or defective links that hinder economic growth. It describes objectives for each corridor as were discussed in the many public meetings during the development of *MI Transportation Plan*. It suggests broad, policy-based strategies that may take advantage of economic opportunities or address transportation barriers and gaps on the corridors. This report also describes Michigan's International Border Crossings and the issues that may impact international travel and the global competitiveness of Michigan.

This report is based on the Michigan Department of Transportation's (MDOT) recognition that passengers and freight travel along geographic corridors on multiple modes between locations or activity centers both within and outside Michigan. While all travel routes and modes are important to MDOT, certain corridors carry the highest value and volumes of goods, services, and people, and provide a higher level of support for the economy or specific economic sectors. These travel routes and modes are the *MI Transportation Plan's* 19 Corridors of Highest Significance described in this report.

The decision to conduct a corridor-based analysis is grounded in the belief that specific corridors serve and support specific economic sectors. By improving specific corridors the businesses and industries dependent on these corridors will be strengthened as will be Michigan's economic competitiveness.

### 1.1 Overview of this Report

This report includes six chapters and four appendices. It also includes two executive summaries; one entitled *MI Corridors of Highest Significance Profile Summary - Executive Summary I* which provides a detailed corridor profile for each of the 19 Corridors of Highest Significance. This corridor profile document also presents a summary of opportunities and missing or deficient links in existing and future multi-modal systems that hinder the movement of goods and services traveling in or through each of the 19 corridors. The second executive summary is organized by the *MI Transportation Plan's* 17 Economic Regions. The *Economic Regions Corridor Summary - Executive Summary II* document presents brief economic region and corridor profiles and key strategies for the Corridors of Highest Significance within each of the *MI Transportation Plan* Economic Regions.

**Chapter 1** explains why a corridor approach is used. **Chapter 2** defines the Corridors of Highest Significance and explains MDOT's process to identify the corridors. **Appendix B** presents the details of the technical approach. **Appendix C** presents the detail of each activity center, their

modal facilities and other characteristics. **Chapter 3** discusses the policy-based significance of these corridor designations. **Appendix D** details broad policy-based strategies and programs that can be used to advance each corridor strategy. **Chapter 4** identifies performance measures that maybe used to evaluate the corridors and international borders during the implementation phase of *MI Transportation Plan*. **Chapter 5** summarizes existing and future international border crossing issues and initiatives. **Chapter 6** presents recommendations that the department will move forward with during the implementation phase of *MI Transportation Plan*.

## **1.2 MDOT's Role in Michigan's Economic Growth and Competitiveness**

MDOT is responsible for a large and diverse number of transportation facilities. These facilities, which support passenger and freight movements, are vital assets to the people and businesses in Michigan, its sub-state economic regions, and the nation. MDOT recognizes that quality transportation is critical to creating, expanding, and keeping jobs in Michigan. Comments and conclusions from the Economic Advisory Group (EAG) and other stakeholder participation activities held for the development of *MI Transportation Plan* demonstrate that Michigan's leadership and public recognize the connection between a quality transportation system, jobs, and Michigan's economy.

The preferred public vision has been developed as part of the plan development process for *MI Transportation Plan*, and can be summarized as follows:

*"Michigan's 2030 integrated transportation system will be the foundation of the state's economic vitality and will sustain quality of life for its residents. Transportation providers throughout the state will work together to address the system's needs holistically. The entire system (all modes) will be maintained, preserved, and protected as one of the state's most important physical assets. The transportation system in 2030 will be responsive to the public's demand for more transit and non-motorized choices. "*

The public desires a mobile transportation system which is innovative, holistic, safe, sustainable, environmentally sound, energy-efficient, and which recognizes that transportation is fundamental to economic development and quality of life in Michigan.

MDOT recognizes that high-quality transportation alone can not generate permanent jobs or long-term economic growth. Economic growth requires providing a balance of conditions and services including:

- A quality environment such as location appearance, quality educational and health care systems, and other quality of life factors;
- Well-functioning infrastructure such as sewer, water, utilities, and transportation systems;
- Resources such as a skilled, available work force, available land, and access to raw materials; and

- Access to these resources and markets.

Michigan's many businesses and governmental agencies are working to create these conditions for each of Michigan's sub-state economic regions as well as the state as a whole.

MDOT's role in economic development is to leverage the performance of the transportation system to support optimal economic conditions for the state and each of its sub-state economic regions. MDOT is also responsible for addressing gaps and missing or defective links in the transportation system, for removing transportation barriers to economic vitality, and ensuring its transportation strategies help existing businesses grow and attract new businesses and jobs. Identifying the needs on Michigan's multi-modal Corridors of Highest Significance and developing strategies for improvements at the corridor level allows MDOT to focus on what is most critical to supporting the economy of Michigan.

### **1.3 Integrating the Corridor Approach with *MI Transportation Plan***

This report identifies Michigan's most used and most valuable corridors and the areas with a large amount of activity (including International Border Crossings) that are origins and destinations for travel. This report also evaluates the conditions and needs of the diverse multi-modal transportation facilities as they relate to the journey.

MDOT chose to apply a corridor approach to its long-range transportation planning process because it provides a method to integrate all modes of transportation with the specific and unique needs, the economic condition, and goals of each sub-state region. Specifically, this corridor approach:

- Focuses on identifying an integrated multi-modal system of highly significant corridors within Michigan;
- Focuses on evaluating and maximizing the mobility and connectivity among these corridors;
- Facilitates evaluating and making focused, multi-modal strategic recommendations targeted to the unique conditions and transportation needs of each corridor, economic sector, and sub-state region (specific strategies and recommendations can be developed and applied to regional priorities, or economic sectors);
- Facilitates coordination with MPOs, economic regions, and MDOT regions;
- Presents recommendations that can comprehensively address multiple needs at a single location;
- Provides consistency between transportation improvements and planned state and local growth and economic development patterns;
- Sets the direction for modal policies to ensure integration;

- Produces corridor specific strategies that: Can include capital, operational, and management investment procedures; and bridge the gap between policy and strategy and lead to implementation.

Both the EAG and public believe MDOT must develop and support a multi-modal transportation system that provides a balance between urban/rural, passenger/freight, residents/tourists, technology/agriculture, transit/highway, community decision-making/need and to maximize the use of non-motorized transportation opportunities. Corridor-focused analyses can lead to strategies that achieve this balance.

## **Chapter 2. Process to Identify Corridors and Activity Centers**

Selection and agreement on the MDOT Corridors of Highest Significance involved a data rich, analytical process that included considerable review and discussion by a *MI Transportation Plan* corridor subcommittee comprised of individuals from throughout the department. This chapter defines the term corridors of significance; explains the key concepts used to identify the corridors; and summarizes the decision-making process and conclusions followed to agree on the corridors. **Appendix B** details the research conducted, technical approach, and analytical process used to identify the final Corridors of Highest Significance.

### **2.1 Definitions**

This section defines *MI Transportation Plan* Corridors of Highest Significance. Corridors serving sub-state regional economic areas are also defined but are not profiled in this report.

#### **2.1.1 Activity Centers**

*MI Transportation Plan's* activity centers, as shown in **Figure 1**, are defined as:

*Geographic locations with concentrations of people, jobs, educational and health service facilities, tourist attractions, or other similar economic-based facilities or services. International border crossings are included within some activity centers.*

MDOT identified these multi-modal corridors and activity centers based on quantitative criteria and an analytical process as explained later in this chapter and **Appendix B**. Details on criteria and thresholds used to identify activity centers are presented in **Table 1**.

#### **2.1.2 Corridors of Highest Significance**

*MI Transportation Plan's* Corridors of Highest Significance, as shown in **Figure 2**, are defined as:

*An integrated, multi-modal system of transportation infrastructure along geographic corridors that provide a high level of support for the international, national, and state economies. These corridors connect activity centers within and outside Michigan and serve the movements of people, services, and goods vital to the economic prosperity of the state.*



*MI Transportation Plan's* Corridors of Highest Significance are not ranked but are defined based on the type of travel they carry. MDOT's Corridors of Highest Significance include facilities that also serve sub-state regional travel and economies.

### **2.1.3 Regionally and Locally Significant Corridors**

Michigan's economy includes local and regional economic activity centers throughout the state. In identifying the Corridors of Highest Significance, it became clear that certain corridors support regional economies and are vital components of the transportation network and the state's economic health. These corridors, identified as Regionally and Locally Significant Corridors, are presented in **Figure 3**. They are not profiled in this report. The corridors are discussed based on their economic region in the *Economic Regions Corridor Summary* and are defined as:

*An integrated, multi-modal system of transportation infrastructure along geographic corridors that provide a high level of support for a specific sub-state region of Michigan's economy. These corridors connect to and augment the Corridors of Highest Significance and serve the movements of people and goods within or between activity centers.*

The Corridors of Highest Significance, as shown on **Figures 2 and 3**, are a subset of all the travel corridors and transportation facilities in Michigan.

## **2.2 Corridor Subcommittee, Peer State Reviews, and MDOT Regions Listening Session**

As part of the development of *MI Transportation Plan* a corridors subcommittee was established. This subcommittee included MDOT representatives from the Bureau of Highways (Regions and Development), the Bureau of Transportation Planning, the Bureau of Aeronautics and the Passenger Transportation Division. The subcommittee members' role was to review, comment, provide information unique to their region or modal expertise, and contribute ideas for the development of this *Corridors and International Borders Report* and the *Economic Regions Corridor Summary* addendum and executive summary.

An initial subcommittee meeting was held on February 9, 2006, to review and compare corridor selection criteria and approaches used by MDOT in their previous long-range plan, *Mobility is Security*, to other peer state corridor-based plans. Matrices of the peer states and their approaches are provided in **Appendix B**. At this meeting, MDOT also discussed how they used, found beneficial, and what they would like to change about the corridors based on the previous statewide plan, *Mobility is Security*. A summary of MDOT staff comments is also presented in **Appendix B**.

In February 2006, subcommittee members agreed that the Corridors of Highest Significance should be multi-modal. They decided that several approaches should be applied to identify and validate the Corridors of Highest Significance for *MI Transportation Plan*. They concluded that one approach should include replicating the corridor identifying style used in the previous Long Range Plan, *Mobility is Security*, with updated data. The subcommittee also discussed and

agreed to keep the criteria used for the previous plan in this analysis. They agreed another evaluation process should be designed to consider “Activity Centers”.

## 2.3 Analytical Approaches

Several variations of the two aforementioned analytical approaches using updated data and applying GIS and transportation modeling techniques were developed. In conducting these analyses, a number of strengths and weaknesses or pros and cons of each methodology became evident. Preliminary findings were presented to the subcommittee on May 5, 2006. The subcommittee agreed to proceed with the Activity Center approach for the selection of corridors to be used in *MI Transportation Plan*.

### 2.3.1 Replicating Previous Approach

MDOT’s previous plan, *Mobility is Security 2000-2025* applied 18 corridor criteria categories with three possible corridor classifications. While the criteria covered all modes, most criteria were applied to highway corridors. The *Mobility is Security 2000-2025* approach was replicated using the latest and best data available for each category. Basically, this approach resulted in the same corridors being identified.

### 2.3.2 Activity Center Approach

The Activity Center approach involved two steps: identifying where activity is concentrated and connecting these centers via various modes. To identify these concentrations, activities were bundled to create centers. **Table 1** presents the criteria, thresholds, and data sources used to identify activity centers. Some activities considered included urban area populations inside and outside Michigan, commercial and retail centers, industrial and business centers, tourism attractions, education and research facilities, passenger facilities, medical facilities and freight and intermodal facilities. By their definition, International Border Crossings are included as and within activity centers.

A total of 50 activity centers were identified within Michigan plus six outside of Michigan. In some cases, small population centers were defined as activity centers because of the type of activities occurring at the location, and the bundling of activities. Each center was then connected to every other center using what were called “desire lines.” Using this two-step process, a matrix was then created from the centers and the “desire lines” connected as corridors; this identified the number of connections -- not traffic volume. **Appendix B** explains this process in detail.

Based on a comparison of the processes, the resulting corridors, and discussion of pros and cons of each approach, the MDOT corridor subcommittee recommended using the Activity Center approach to identify the Corridors of Highest Significance. However, during the May 5, 2006 meeting, the subcommittee asked for the addition of several “activities” as well as several suggestions to refine the Activity Center approach. These changes were incorporated and a final set of activity centers and corridors were presented to the subcommittee at a meeting on August 30, 2006.

**Table 1: Activity Center Criteria and Data**

<i>Activity Center Criteria</i>	<i>Measure</i>	<i>Threshold</i>
<b>Urban</b>		
Urban Areas/Urban Clusters in Michigan	Population by TAZ*	Greater than 5,000 Persons
Nearest Urban Center outside Michigan	Population	Greater than 200,000 Persons (Transportation Management Area (TMA))
<b>Commercial</b>		
General Economic Activity	Total Employment	Greater than 2,500 Employees
Retail Activity	Retail Employment	Greater than 1,000 Employees
<b>Tourism</b>		
Hotel Capacity	Hotel Units	100 or More Units
Annual Lodging Use Tax Revenue	Tour Tax	Annual Tax Value \$50,000 or more
Gaming	Gaming Centers	Major Gaming Centers were identified as a characteristic of an Activity Center
State Park	State Park Location	None
Number of Visitors	Person Trips	Annual Personal Trip Total Greater or Equal 1,000,000
Length of Stay	Person Days	Annual Personal Trip Total Greater or Equal 3,000,000
<b>Education/Technology Center</b>		
Postsecondary Education Centers	Type of Postsecondary	Community Colleges and Universities
Smart Zones	Technology Centers	All Smart Zones
<b>Life Sciences Facilities</b>		
Hospital	Local Employment	Greater than 500 Employees
<b>Correctional Facilities</b>		
Prisons	Prison Facility Locations	All Prison Facilities were identified as a characteristic of an Activity Center
<b>Passenger Facilities</b>		
Air Passenger	Passenger Enplanements	All Airports with Passenger Enplanements
Amtrak	Passenger Stations	All Active Passenger Stations
Intercity Bus Station	Passenger Stations	All Active Intercity Passenger Bus Stations
Car Pool	Number of Lots	All Parking Lots
<b>Freight Facilities</b>		
Air Cargo Ports	Cargo Deplanements	All Airports with Cargo Deplanements
Marine Ports	Cargo Tonnage	All Cargo Ports Receiving or Shipping Tons of Goods
<b>International Border Crossing</b>		
Passenger and Freight	Passenger and Freight	All International Border Crossings with Passenger and Freight Activities

\* TAZ = Traffic Analysis Zone, boundary set by statewide model, see **Appendix C** for details.

### **2.3.3 Resulting Activity Centers and Corridors**

Several additional comments and refinements were requested at the August 30, 2006 subcommittee meeting. The final analysis resulted in 50 activity centers inside Michigan and six centers outside Michigan and 19 Corridors of Highest Significance. Each of the international border crossing locations is included within an activity center. **Figure 1** presents a map of the resulting activity centers. **Appendix C** includes maps and profiles of each activity center and the modal facilities within them. **Figure 2** presents the resulting corridors.



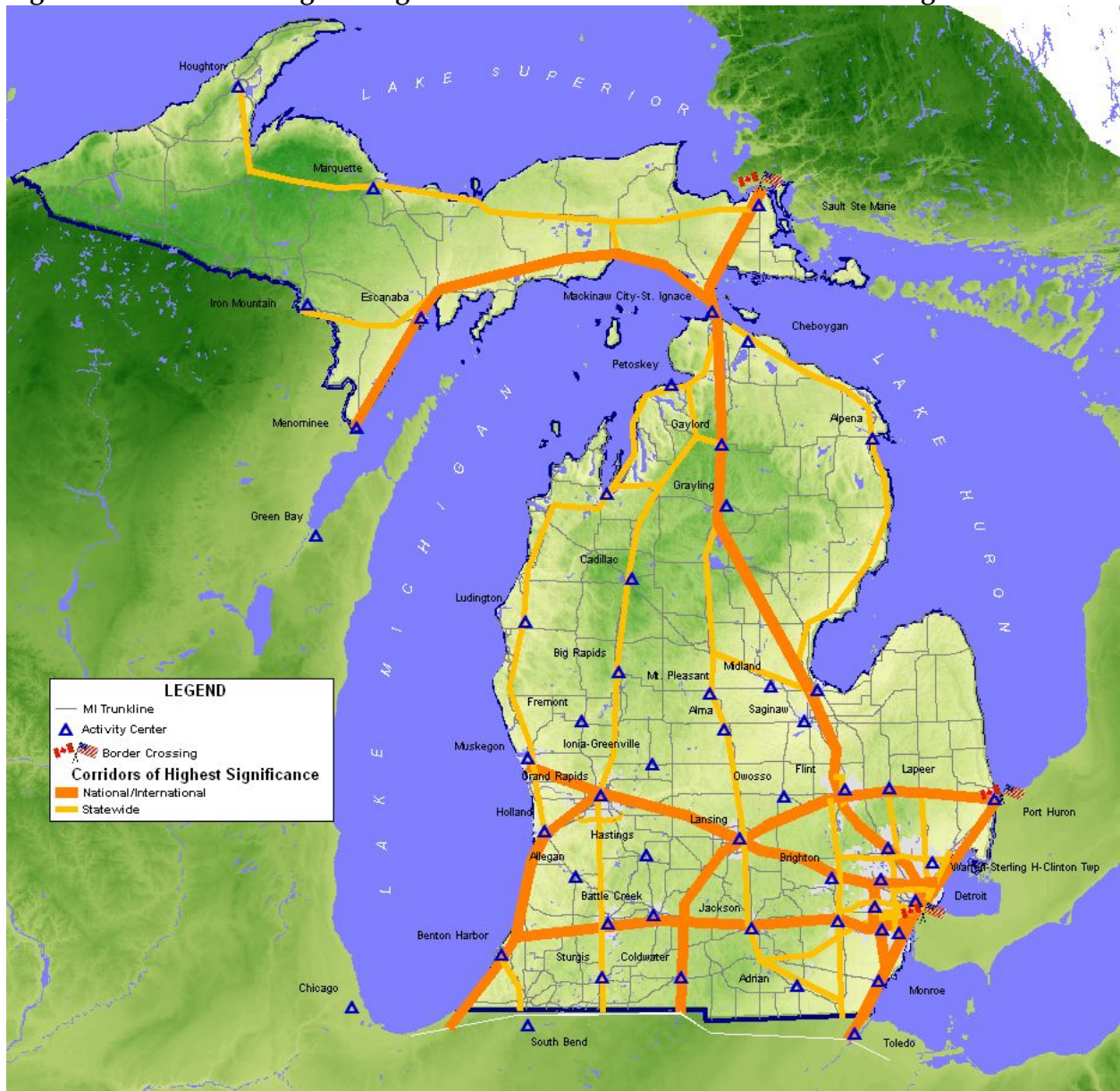
Figure 1: Activity Center and International Border Crossings



Source: Wilbur Smith Associates, May, 2006



Figure 2: Corridors of Highest Significance and International Border Crossings



Source: Wilbur Smith Associates, 2006

## 2.4 Corridor Nomenclature

MDOT considered several options on how to prioritize or stratify the *MI Transportation Plan* corridors into categories. One option evaluated was a magnitude/tiered approach based on the previous *Mobility is Security Plan* in which corridors were labeled as high, medium, or low significance. A second magnitude/tiered option evaluated was based on primary travel carried plus its value and volume (international, national, state, regional, local significance), while still another system took into account future factors such as emerging corridors. Using functional

categories, such as agriculture, automotive technology, life science, etc., for naming corridors was also evaluated.

Ultimately consensus was reached that the:

- Corridors will be referred to as Corridors of Highest Significance;
- Only sub-categorization will be that they are significant for either statewide travel or national/international travel;
- Corridors will be designated, named, or labeled based on the primary travel origin/destination they serve – international, national, statewide, regional, and local.

Some of the reasoning behind these decisions includes:

- MDOT recognizes that all corridors serve important and varied purposes.
- Some naming of corridors has already taken place by other governmental agencies and public interest groups. For example, Life Sciences Corridors, University/Smart Zones, Technology Corridors, etc. have been defined by the Michigan Economic Development Commission (MEDC) and other Michigan governmental agencies. MDOT wants to compliment, provide consistency, and avoid confusion with other naming initiatives.
- The Emerging Corridors category was dropped for several reasons. First, based on the Activity Center approach and review of the travel growth, the corridors identified as having highest significance are those where growth is expected to continue. Also, this plan is updated every five years, and analysis is conducted on trends every year. These processes would identify any new or emerging corridors.

## Chapter 3. Corridors of Highest Significance

This chapter discusses *MI Transportation Plan's* Corridors of Highest Significance. These multi-modal corridors include those identified as having international/national, and statewide significance. Michigan's International Border Crossings are included in activity centers. This chapter also describes the significance of the designation as a Corridor of Highest Significance. Corridors serving sub-state regional economic areas are also identified in this chapter but are not profiled. Details on conditions and issues at International Border Crossings are presented in **Chapter 5**.

**Figure 2** presents a map of *MI Transportation Plan* National/International Corridors of Highest Significance and International Border Crossings. **Figure 3** presents a map that includes regionally and locally significant corridors. **Figure 4** includes a map with identifying letters included to facilitate locating the corridors on the statewide map.

MDOT's Corridors of Highest Significance include:

**Corridors of National / International Significance**

<b>Corridor:</b>	<b>General Description:</b>
<b>A Mackinaw City–St. Ignace / Wisconsin</b>	Starts in St. Ignace and follows US-2 to M-35 in Escanaba; follows M-35 to Menominee; ends at Wisconsin border.
<b>B Sault Ste. Marie / Bay City</b>	Starts at Canadian border in Sault Ste. Marie; follows I-75 and ends at Bay City.
<b>C Bay City–Midland–Saginaw / Flint / Detroit</b>	Starts in Bay City and follows I-75 to Detroit.
<b>D Muskegon / Grand Rapids / Lansing / Detroit</b>	Starts in Muskegon and follows I-96 through Grand Rapids, Lansing, Livonia and ends in Detroit.
<b>E Detroit / Chicago</b>	Starts in Detroit and follows I-94 through Ann Arbor; ends at Indiana border.
<b>F Grand Rapids / Chicago</b>	Starts in Grand Rapids and follows I-196 through Holland to I-94; follows I-94 and ends at Indiana border.
<b>G Port Huron / Detroit / Toledo</b>	Starts at Canadian border in Port Huron; follows I-94 to I-75 in Detroit; follows I-75 and ends at Ohio border.
<b>H Port Huron / Lansing / Indianapolis</b>	Starts at Canadian border in Port Huron; follows I-69 through Lansing; ends at Indiana border.
<b>J Port Huron / Chicago</b>	Starts at Canadian border in Port Huron; follows I-69 through Lansing to I-94; follows I-94 and ends at Indiana border.
<b>K I-696</b>	Starts at I-96 in Farmington Hills and follows I-696; ends at I-94.
<b>L I-275</b>	Starts at I-96/I-696 interchange in Farmington Hills and follows I-275; ends at I-75.

### Corridors of Statewide Significance

Corridor:	General Description:
<b>M</b> Houghton / Marquette / Sault Ste. Marie	Starts in Houghton and follows US-41 to Marquette; follows M-28 to I-75; follows I-75 and ends at Canadian border.
<b>N</b> Petoskey / Grand Rapids / Indiana	Starts in Petoskey and follows US-131 through Grand Rapids; ends at Indiana border.
<b>P</b> Mackinaw City–St. Ignace / Holland	Starts in Mackinaw City and follows US-31 through Petoskey, Traverse City, and Muskegon; ends in Holland.
<b>Q</b> Benton Harbor / Indiana	Starts in Benton Harbor and follows US-31 through Niles; ends at Indiana border.
<b>R</b> Flint / Toledo	Starts in Flint and follows US-23 through Ann Arbor; ends at Ohio border.
<b>S</b> Mackinaw City–St. Ignace / Alpena / Standish	Starts in Mackinaw City and follows US-23 through Alpena; ends at Standish.
<b>T</b> Grayling / Jackson	Starts in Grayling and follows I-75 to US-127; through Lansing and ends in Jackson.
<b>U</b> Jackson / Toledo	Starts in Jackson and follows US-127 to US-223; through Adrian to US-23; follows US-23 and ends at Ohio border.
Note: Corridors I and O were intentionally skipped to avoid confusion with the number 0 and 1.	

Michigan's major International Border Crossings are included within identified activity centers as shown on **Figure 1**. They are discussed in **Chapter 5** of this report and include Michigan's International Border Crossings supporting the highest value of goods and largest movements of passengers and goods. Major international aviation ports of entry are also discussed in **Chapter 5**. Major water ports are discussed within the corridor profiles in *MI Corridors of Highest Significance Summary – Executive Summary I* and in the *MI Economic Region Corridor Summary – Executive Summary II*.

Michigan's International Border Crossings addressed in this report include:

Vehicular and Rail Crossing	Location
Ambassador Bridge	Detroit
Detroit-Windsor Tunnel	Detroit
Blue Water Bridge	Port Huron

International Bridge	Sault Ste. Marie
Rail Bridge	Sault Ste. Marie
Rail Tunnel	Port Huron
Detroit-Windsor RR Tunnel	Detroit
Blue Water Ferry	Port Huron
Walpole-Algonac Ferry	Port Huron
Detroit-Windsor Truck Ferry	Detroit

Note the Proposed New Detroit River Crossing is also discussed in **Chapter 5**.

<b>Airport-Based Ports Of Entry</b>	<b>Location</b>
Detroit Metropolitan Airport	Detroit
Gerald R. Ford International	Grand Rapids
Bishop International	Flint
MBS International	Saginaw
Kalamazoo/Battle Creek	Battle Creek
Sawyer International	Gwinn
Chippewa County International	Sault Ste. Marie
Oakland County International	Pontiac
St. Clair County International	Port Huron

**International Marine Ports of Entry Location**

Port of Detroit	Detroit
Saginaw River	Saginaw



Figure 3: Regional/National Corridors of Highest Significance



Source: Wilbur Smith Associates, 2006

Figure 4: Lettered Corridors of Highest Significance



Source: Wilbur Smith Associates, 2006.

### 3.1 MDOT's Corridors of Highest Significance vs. Statewide Transportation System

*MI Transportation Plan's* Corridors of Highest Significance represent a subset of Michigan's multi-modal transportation system. While they include only part of the state's system (for example: 34 percent of the roadways and 67 percent of the rail miles) they serve a large segment of the travel needs of Michigan's businesses and citizens (71 percent of the total vehicle miles and 96 percent of the rail-ton miles.) **Table 2** compares the summary of the combined attributes of the Corridors of Highest Significance to the entire statewide transportation system.



**Table 2: Comparisons – Existing Statewide Infrastructure Totals to Corridors of Highest Significance including International Border Crossings**

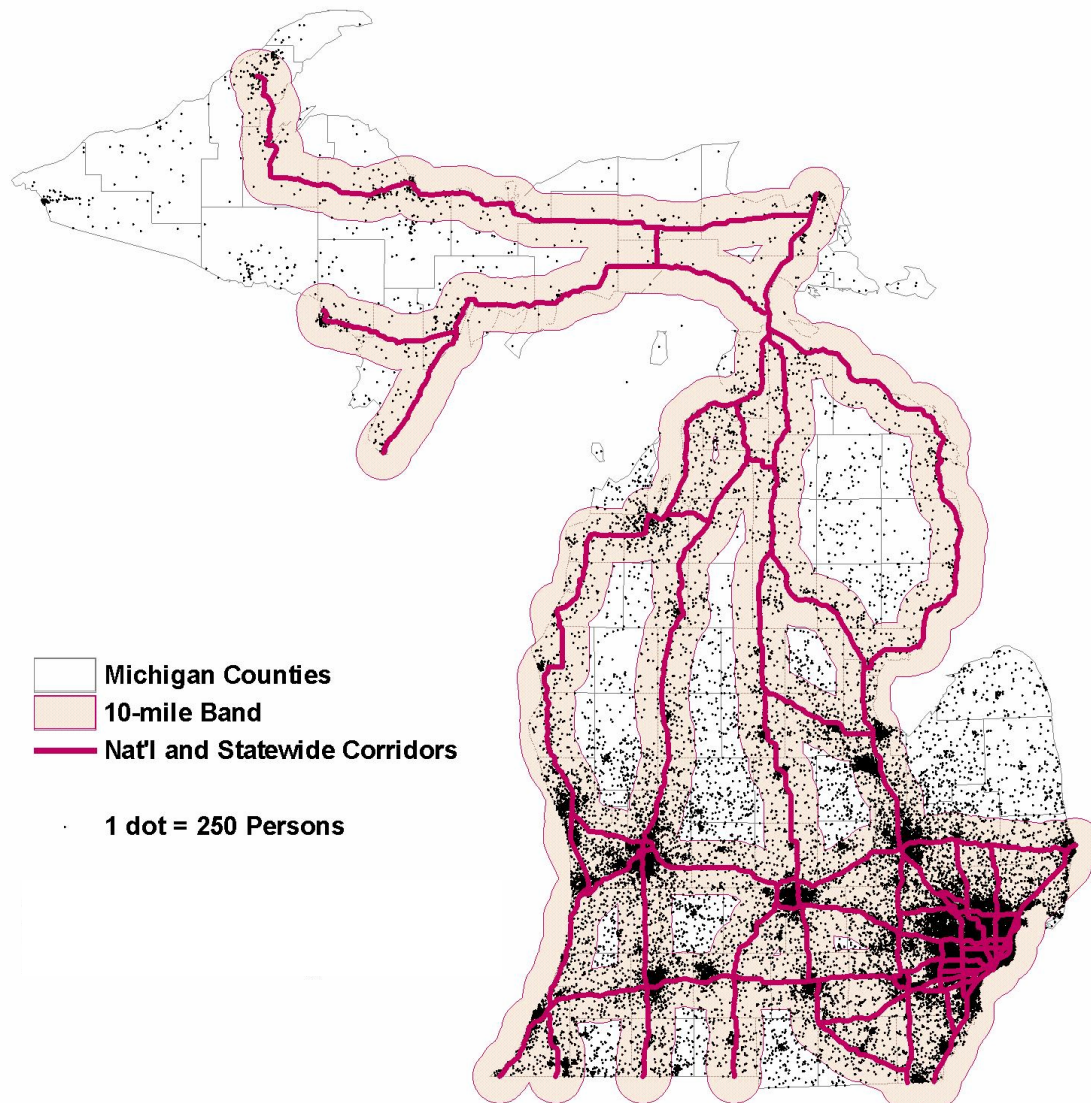
<i>Mode</i>		<i>Statewide Total</i>	<i>National and Statewide Corridors</i>	<i>% National and Statewide Corridors</i>
Highway	State Highway Miles	9,703	3,279	34%
	Total Vehicle Miles	144 billion	102 billion	71%
	Passenger Vehicle Miles	131 billion	91.7 billion	70%
	Commercial Vehicle Miles	13 billion	10.6 billion	81%
	Truck Ton Miles	52.8 billion	46.5 billion	88%
	Truck Value Miles	134.6 trillion	125 trillion	93%
Rail	Rail Track Miles	3,590	2,405	67%
	Rail-Ton Miles	15.2 billion	14.6 billion	96%
	Rail-Value Miles	20.5 trillion	19.9 trillion	97%
Aviation	Commercial Airports	17	17	100%
	General Aviation Airports	236	178	75%
Marine	Ferry Services	21	12	57%
	Cargo Ports	40	34	85%
	Waterborne Tonnage	78.7 million	67 million	85%
Transit	Passenger Rail Miles	568	568	100%
	Intercity Bus Stations	39	37	95%

Source: Michigan Department of Transportation Statewide and Urban Travel Analysis Section, 2006

Because the corridors are multi-modal, and not limited to the highways, their service areas are defined as including the population and employment within a 20-mile geographic area around the corridor. These corridors have a major impact on supporting both the state's population and economy as approximately 92.8 percent of Michigan's population resides within a 20-mile geographic area around a corridor of national or statewide significance. Additionally, approximately 95.1 percent of Michigan's employment base is located within a 20-mile geographic area around a corridor of national or statewide significance.

**Figure 5** presents a map showing the population within the 20-mile wide geographic areas associated with the Corridors of Highest Significance. **Table 3** presents a comparison of corridor values based on some of the characteristics used to define each corridor's value.

**Figure 5: Population within a 20-mile geographic area around the Corridors of Highest Significance**



Source: Michigan Department of Transportation Statewide and Urban Travel Analysis Section

Table 3: Comparison of corridor values based on some of the characteristics used to define each corridor's value

	% Population w/in 20 miles buffer zone	% Jobs w/in 20 miles buffer zone	Avg. ADT	Student Population	Commercial Enplanements	Visitor Day/ year (million)	Truck Freight avg. tons (million)	Truck Freight \$ avg. value (billion)	Rail Freight avg. Tons (million)	Rail Freight \$ avg. value (billion)	Number of Border Crossings
<b>A</b> Mackinaw City–St. Ignace/Wisconsin	0.6%	0.7%	5,500	2,400	9,600	3.5	7.0	\$10.1	4.0	\$1.6	
<b>B</b> Sault Ste. Marie / Bay City	3.0%	2.9%	12,000	14,000	15,000	16	15.6	\$30.0	0.2	\$0.1	1
<b>C</b> Bay City–Midland–Saginaw/Flint/Detroit	31.9%	33.6%	83,000	164,500	883,000	32	28.0	\$63.5	2.4	\$1.9	4
<b>D</b> Muskegon/Grand Rapids/Lansing/Detroit	37.8%	40.2%	64,400	242,000	1,500,000	40	18.7	\$56.2	9.9	\$14.4	4
<b>E</b> Detroit/Chicago	31.3%	30.2%	54,300	222,000	18,000,000	44.4	60.2	\$204.2	9.1	\$16.0	4
<b>F</b> Grand Rapids/Chicago	8.8%	11.1%	32,400	111,000	1,300,000	20.3	49.0	\$135.6	11.5	\$14.0	
<b>G</b> Port Huron/Detroit/Toledo	26.7%	23.1%	76,200	115,000	124,000	30	32.8	\$107.8	11.3	\$17.6	8
<b>H</b> Port Huron/Lansing/Indianapolis	11.5%	11.4%	28,500	110,000	870,000	20	26.0	\$78.9	n/a	n/a	4
<b>J</b> Port Huron/Chicago	15.7%	15.9%	35,500	156,500	1,100,000	28	45.3	\$141.8	26.0	\$40.9	4
<b>K</b> I-696	25.3%	27.1%	164,000	55,500	n/a	5.6	16.3	\$51.4	n/a	n/a	
<b>L</b> I-275	14.3%	15.8%	92,000	72,700	18,000,000	29	2.0	\$1.5	10.0	\$10.4	
<b>M</b> Houghton/Marquette/Sault Ste. Marie	1.4%	1.4%	5,100	15,000	103,000	7.8	4.7	\$8.0	2.8	\$0.4	1
<b>N</b> Petoskey/Grand Rapids/Indiana	11.6%	13.3%	21,000	118,000	1,300,000	23	10.1	\$17.0	1.8	\$2.9	
<b>P</b> Mackinaw City–St. Ignace/Holland	6.2%	6.7%	14,000	21,000	303,000	23	3.8	\$6.5	1.2	\$0.2	
<b>Q</b> Benton Harbor/Indiana	1.5%	1.5%	13,300	7,000	2,800	3	10.7	\$18.9	n/a	n/a	
<b>R</b> Flint/Toledo	10.1%	10.1%	50,100	105,000	560,000	11.2	29.6	\$64.2	4.4	\$4.3	
<b>S</b> Mackinaw City–St. Ignace /Alpena/Standish	1.1%	1.1%	5,000	2,000	9,700	9.7	1.0	\$1.1	0.5	\$0.1	
<b>T</b> Grayling/Jackson	6.7%	7.5%	20,200	110,000	311,000	15	6.0	\$11.7	1.1	\$2.5	
<b>U</b> Jackson/Toledo	2.8%	2.2%	16,000	18,000	12,000	6.7	4.3	\$10.2	n/a	n/a	

Source: Wilbur Smith Associates, 2006



### 3.2 Significance of Designation as MDOT “Corridor of Highest Significance”

The 19 multi-modal corridors designated as *MI Transportation Plan’s* Corridors of Highest Significance connect Michigan’s urban areas and key activity centers within and outside the state; provide the highest level of transportation services for Michigan’s citizens, businesses, and industries; and, carry the highest values of commodities within and through the state. Because of their value and importance to Michigan’s current and future economic health and competitiveness, MDOT has developed specific policies to guide management, operational, and investment decisions relative to transportation facilities within the MDOT Corridors of Highest Significance service areas.

The following guiding policies will guide MDOT in making the right business decisions to make or keep these corridors and Michigan economically competitive. The policies provide MDOT with direction or guiding principles for their decisions, courses of action, and procedures in matters relating to all transportation facilities and modes within these corridors. These corridor policies also define priorities for MDOT in determining the type of internal and external resources, the kinds of programs, as well as the authority for committing resources to these corridors.

These policies also reflect the corridor decision principles as stated in, **Chapter 10** of the *Integration Technical Report*.

#### Corridor Policy Stipulations:

1. Current and future suggested MDOT policies will apply to the Corridors of Highest Significance.
2. MDOT strives to provide an equitable program of projects and funds throughout the state for all modes of transportation.
  - a. While a Corridor of Highest Significance may receive special consideration, MDOT will not focus its total funding or programming efforts on these corridors to the exclusion of or to the detriment of other transportation facilities within Michigan.
  - b. Designation as a Corridor of Highest Significance does not mean that every project or need on the corridor will be addressed prior to the needs on other roadways or modal facilities funded by MDOT.
  - c. Corridors within the majority of MDOT’s Metro Region and several other urbanized core cities are part of a complex interdependent freeway and non-freeway system. Often planning along a single corridor does not adequately address the needs of these complex systems. Since the network of both freeway and non-freeway needs must work together, particularly for maintenance of traffic requirements that are demanded by the public, a network analysis is often the most applicable approach to development and identification of strategies and infrastructure improvements. It

should also be noted that network analysis will need to continually evolve due to the varied implementation schedules of programs, changing travel patterns, and construction associated within these urbanized areas.

### **3.2.1 Corridor Management Policies**

Leadership in Coordination: MDOT will take a leadership role in transportation issues statewide by developing and facilitating partnerships to ensure transportation system deficiencies along these corridors are minimized. For example:

- If there is a gap in the transit system such as a need to connect a local transit provider with an intercity transit provider, MDOT will take a leadership role in bringing together the local public transit provider, appropriate local government representatives, and private sector transit providers to seek solutions.

Innovative Partnerships and Programs: MDOT will actively seek and support partnerships with FHWA, local governments, MPOs, RPA's, and businesses to identify and advance innovative, multi-modal programs, financing, and solutions that may improve safety, mobility, and economic competitiveness within the Corridors of Highest Significance. For example:

- MDOT will continue to participate in the Regional Concept for Transportation Operations (RCTO). A RCTO is the collaboration and coordination between transportation system managers responsible for operating the transportation system on a day-to-day basis. The RCTO within the metropolitan Detroit area serves the following three important functions:
  - Provides a mutual direction and vision for the future of transportation systems management and operations,
  - Enables elected and appointed officials to commit to a regional approach to transportation management and operations, and
  - Strengthens the linkage between regional planners and managers responsible for the day-to-day management of the transportation system.
- MDOT will participate in partnerships with local governments and MPOs to support local access management initiatives, travel demand management (TDM), and transportation system management (TSM) programs, or land use planning that supports transit-oriented development.

Innovative Construction Methods: MDOT will consider the use of and continue to improve specialized construction methods for major construction projects on Corridors of Highest Significance. For example:

- Rapid reconstruction methods;
- Contractor incentive clauses;
- Night-work and other non-peak scheduled work;
- Expedited construction schedules; and

- Long-term infrastructure fixes, etc.

System Maintenance: The maintenance of MDOT's transportation assets are a high priority. Historically, goals, program objectives and MDOT management practices have resulted in high levels of performance as well as cost savings in recent years. MDOT will continue its leadership role, in coordination with its transportation partners, to ensure that adequate maintenance levels are achieved statewide across all modes of the transportation system to protect the public's investment for the future.

Corridor Completion: MDOT will strive to address missing or deficient links and gaps within all Corridors of Highest Significance to produce a corridor of uniformly high quality throughout its length. For example, Corridor completion is defined as having the entire corridor meeting operational, safety, congestion, and design performance metrics goals.

- (NOTE: This policy is not intended to promote capacity additions as the only solution for completion.)

Corridor Plans: Specific corridor-based plans and strategies will be initiated for strategic portions of National Corridors of Highest Significance that have immediate or near-term system condition needs. Each corridor-specific plan will provide a master plan to guide implementation of such improvements and will include, at a minimum:

- Objectives and strategies to address a corridor's unique conditions and economic potential;
- Analysis of corridor user needs and activities and the potential for leveraging financing and performance among all modes on the corridor; and
- Identification of solutions including public-private partnerships between MDOT, local governments, MPOs, RPOs, and area businesses.

Access Management: MDOT will work with local governments to implement Access Management, TDM, and TSM programs along the non-limited access Corridors of Highest Significance. MDOT will also continue to partner with its local officials to uphold access management principles by cooperatively reviewing development plans and driveway permit applications. MDOT will continue to seek to implement access management plans in cooperation with those local agencies with jurisdiction over land use decisions when programming future projects along the Corridors of Highest Significance.

Statewide TDM/TSM Initiative: MDOT will continue to promote statewide TDM/TSM initiatives along Corridors of Highest Significance including but not limited to:

- Developing educational materials and sponsoring training programs for local governments focused on what they can do to improve transportation mobility by applying TDM/TSM strategies;
- Providing technical support to assist local governments; and
- Providing incentives (such as streamlined processing of driveway permits) for local governments who implement Access Management, TDM, and TSM programs.

Carpool or Park and Ride: MDOT will evaluate and construct and/or expand, as warranted, carpool or park and ride lots within the corridors. Emphasis will be placed on improving those park and ride lots that promote and facilitate ridesharing, reduce congestion and motor vehicle usage along the Corridors of Highest Significance. The department will continue to work with local communities and transit agencies to promote usage and offer better services.

Local-Access Interchanges: Improvements to existing interchanges and construction of new interchanges present a special need for state and local coordination. Over the life of the *MI Transportation Plan*, MDOT will be focusing its limited resources on improving the operations of trunk-line to trunk-line interchanges. The limited number of trunkline local interchange improvement projects maybe selected in response to traffic needs on a statewide priority basis but will require local coordination and a concurrent local commitment through right-of-way donation, project funding, and/or a concurrent local commitment to widen the local road as necessary.

Local authorities may choose to widen the local road at an interchange to attract development, even though current traffic volumes do not warrant such an improvement. Such improvement may also require improvement to state highway interchange ramps. Interchange improvements prompted by locally encouraged and approved developments are the financial responsibility of local authorities. This type of project is not part of the MDOT project selection process, but does require coordination with MDOT.

The local agency and/or private sector developers are responsible for all costs associated with a new interchange necessitated by private sector development including grade separations, right-of-way improvements, and approach work. An exception to this policy maybe granted in cases where MDOT has determined that reduction in existing congestion at adjacent trunkline interchanges can be reasonably expected and where FHWA justification criteria warrant an additional break in access. In such cases, MDOT may assume costs for structures and ramps only. The costs associated with local roadway work outside of the ramps, including right-of-way costs, remain the responsibility of the local road agency.

Roadside Facilities Strategy: Roadside facilities such as rest areas, welcome centers, and roadside parks provide an added amenity along Corridors of Highest Significance and should be maintained in such a manner that citizens of the state can be proud of them. MDOT will continue to invest in roadside facilities along the Corridors of Highest Significance so that safe, clean, barrier free and accessible facilities are available to all travelers.

### **3.2.2 Operational Policy Options for Consideration**

Systemwide Operational Plans: Because of the volume of freight and people that move along the International/National Corridors of Significance and the significance these movements have on the state's and nation's economy, MDOT will seek to maximize the efficiency and operations of its transportation systems. Specifically within these corridors, MDOT will seek to expand and enhance Intelligent Transportation Systems (ITS), incident management, maintenance of traffic and construction staging strategies that ensure that the network of both freeway and non-freeway system elements work efficiently together.

ITS: MDOT will work to implement multi-modal ITS technology within all Corridors of Highest Significance. For example:

- Incident Management: MDOT will continue to partner with the appropriate state and local agencies to develop law enforcement education and training programs to explain the importance of quick response in the clearing of incidents.
- Quick Clearance: MDOT will take the lead to develop partnerships among local law enforcement agencies to jointly identify responsibility, prioritize, and clear incidents as soon as possible so as to minimize traffic delay.
- Communication and shared information: MDOT will work with the Michigan State Police to develop compatible emergency communication networks with and among local law enforcement agencies.
- Pre-pass: MDOT will continue to implement ITS technologies that provide streamlined permitting and clearance to freight vehicles traveling in and through Michigan.

Reduce Delays: MDOT will work to minimize disruption to mobility from incidents, construction, and recurring congestion along Corridors of Highest Significance by developing and applying corridor-specific operational improvement strategies. For example:

- Maintenance of Traffic during Construction: Where feasible, MDOT will complete construction projects within a corridor segment and will evaluate if delays can be reduced by performing work only at night or during off-peak hours. MDOT will also consider widening shoulders where feasible to add temporary traffic lanes to minimize delays.
- High Occupancy Vehicle Lanes (HOV): MDOT will continue to evaluate the feasibility of implementing managed lane configurations along its Corridors of Highest Significance. Where warranted, MDOT will take a leadership role to actively seek public and private partnerships to establish HOV lanes that give preference to vehicles carrying more than one occupant.
- Intersection Improvements: MDOT will continue to evaluate how intersections on Corridors of Highest Significance function. As part of this analysis MDOT will consider improvements in both the safety and operation of the intersection including but not limited to: adding turn lanes, prohibiting left turns, constructing roundabouts, changing signalization or making other improvements as needed to improve corridor operations.
- Tourism-based Corridors: Where physically possible, MDOT will maintain two-lanes of traffic during peak recreational seasons and holiday periods.
- Bridges within Urbanized Boundaries: When bridge reconstruction is planned within Corridors of Highest Significance MDOT will evaluate whether additional lanes should be added during reconstruction to allow for maintenance of traffic, incident management and long-term capacity purposes.



### 3.2.3 Investment Policy Options for Consideration

Priority: MDOT will, in their project prioritization, programming, and funding, give priority to needed improvements to all modal facilities along the Corridors of Highest Significance relative to similar needs to facilities on other corridors.

Planning Funding set-asides: MDOT will annually assess whether its SPR funds can be utilized for MDOT sponsored corridor planning studies and innovative programs to address safety, access, choices, integration, or mobility on its Corridors of Highest Significance.

Innovative Financing: MDOT will routinely identify, consider, and seek innovative funding and financing (such as public-private partnerships) for projects on Corridors of Highest Significance.

Indexing Investment Strategies: To ensure Michigan is best positioned to compete in a global economic environment, MDOT will develop an indexed investment strategy. For example:

- Maintain pavement and bridge conditions on Corridors of National/International Significance at 90-percent good condition;
- Maintain pavement and bridge condition on Corridors of Statewide Significance at 80-percent good condition; and
- Maintain pavement and bridge condition on corridors of Regional Significance at 75-percent good condition.

## 3.3 MDOT “Corridor of Highest Significance” Profile Summary

For each of the *MI Transportation Plan* 19 Corridors of Highest Significance, a profile has been developed and is included within the *MI Corridors of Highest Significance Profile Summary – Executive Summary I*. The summary presents the following:

- Profile and map;
- Discussion of corridor value;
- Analysis of opportunities or barriers to movement, including missing or deficient links and existing and future physical transportation system gaps;
- Corridor objectives; and
- Broad, policy-based corridor strategies designed to advance the corridor-specific objectives.

The numbers presented in each corridor profile are corridor-specific. Because corridors cross each other and share activity centers, corridor values and conditions described cannot be simply added to create a statewide total. To a certain degree many values are double counted or attributed to more than a single corridor. Because the corridors are multi-modal, and not limited to the highways, their service areas are defined as including the population and

employment within a 20-mile geographic area around the corridor. Adding the numbers from all 19 corridors will produce a number higher than the statewide total.

### **3.4 Broad Policy-Based Corridor Strategies**

MDOT will implement the recommendations contained within this transportation plan by developing and advancing a set of strategies, policies, programs, activities, and projects that achieve the preferred vision of *MI Transportation Plan*. The corridor element of this plan and the associated strategies will support the overall planning goals and vision established for the statewide transportation system while addressing and being sensitive to the unique and specific needs and objectives, opportunities, barriers or limitations of the corridor, region, or sub-area.

Specific corridor policy-based recommendations are presented for each National/International and Statewide Corridor of Significance in the *MI Corridors of High Significance Profile Summary – Executive Summary I* and in the *Economic Regions Corridor Summary-Executive Summary II*. The recommended strategies for each corridor address its unique character, performance-based needs, and objectives (as articulated during the public participation processes and “Attitudes and Perceptions of Transportation in Michigan: A Survey of Michigan Adults,” March 2006 conducted for *MI Transportation Plan*). The recommended corridor strategies also consider the opportunities, barriers or limitations within each corridor.

An alphabetical listing of the strategy groups used as the basis for the recommendations has also been included in the *MI Corridors of Highest Significance Profile Summary – Executive Summary I*. The strategy groups selected and presented are consistent with the goals, vision, objectives, and other input from Michigan stakeholders and are applicable to Michigan’s Corridors of Highest Significance. **Appendix D** presents and describes in detail the strategy groups and their respective policies, activities, projects, and programs.

## **Chapter 4. Performance Measures**

This chapter identifies the goal areas and performance measures (PM) that will be used during the implementation phase of *MI Transportation Plan* to evaluate and track the performance of the Corridors of Highest Significance over time. These corridor goals and performance measures are based on, and consistent with, the goals and performance measures used for *MI Transportation Plan*. The measures evaluate the objectives and desired system characteristics which were articulated during the plan development process by the public workshops, the Economic Advisory Group (EAG), MDOT management, and MDOT staff. This evaluation will be one of the first steps of the implementation phase of *MI Transportation Plan*.

System performance measure goals consist of:

- Stewardship;
- Safety and Security;

- System Improvement; and
- Efficient and Effective Operations.

Additional performance measure goals for the Corridors of Highest Significance are:

- Modal Choice including access, system integration, and connectivity; and
- Freight Adequacy.

## 4.1 Performance Measures

Since Corridors of Highest Significance are, by definition, multi-modal, performance measures account for modal differences as well as evaluate system integration. **Table 4** shows which performance measures will be used to track progress towards achieving the goals of the MI Transportation Plan. The systemwide performance measures as well as the considerations and method of measurement can be found in the *MI Transportation Plan Goals, Objectives, and Performance Measures Report*, prepared as a guiding document for *MI Transportation Plan*.

**Table 4: Performance Measures and Criteria**

<i>Goal</i>	<i>Performance Measure</i>
<b>Systemwide Performance Measures</b>	
Stewardship	Percent of Bridges in Good/Fair Condition Percent of Pavement in Good/Fair Condition Percent of Runways in Good/Fair Condition Percent of Local Transit Vehicles Eligible for Replacement Percent of System Meeting Acceptable IRI Number of Jobs Supported by MDOT Customer/Stakeholder Satisfaction Rating
Safety and Security	Fatality rates Crash Rates <ul style="list-style-type: none"> <li>• Annual Railroad Crossing Crashes</li> <li>• Annual Transit Crashes</li> <li>• Annual Highway Crashes</li> <li>• Annual Bike/Pedestrian Crashes</li> <li>• Annual Deer Related Incidences</li> <li>• Cost of Crashes</li> </ul> Number of Airports with Emergency Service Plans Seatbelt Use
System Improvement	Number of Passenger Terminals Served by Two or More Modes Number of Intermodal Facilities with National Highway System (NHS) Connectors Hours of Delay Percent of System Meeting Acceptable Levels of Service (LOS) Number of Airports with All Weather Access Annual Cost of Delay

	Percent of System Served by Local Transit
Effective and Efficient Operations	Percent of System with Adopted Access Management Plans Percent of System with Adequate Shoulder Width for Non-Motorized Use Hours of Delay Percent of System with Acceptable Level of Service (LOS) Customer Stakeholder Satisfaction Rating
<b>Corridor-specific Performance Measures</b>	
Modal Choice	Number of Modes within Corridor per Mile Average Transfer Time at Intermodal Facility Percent of Population Served by Modes Facility and Station Condition Roadways with Seasonal Load Restrictions
Freight Adequacy	Safety <ul style="list-style-type: none"> <li>Roadway Crash History</li> </ul> Roadway and Bridge Modernization/Design <ul style="list-style-type: none"> <li>Vertical Clearance</li> <li>Weight Capacity</li> <li>Lane Width</li> </ul> Intermodal Issues

## 4.2 Goals, Objectives, and Performance Measure Rationale

The performance measures were determined using the systemwide goals and objectives and a set of selection criteria. The *Goals, Objectives, and Performance Measures Report*, presents the four systemwide goals, their associated objectives, and the 12 selection criteria (a rationale) used to develop the systemwide performance measures. Goals and objectives are the desired outcomes or changes to the transportation system determined through public workshops, Economic Advisory Group (EAG) meetings, and MDOT management direction. The systemwide objectives for each goal are grouped into three categories of Integration, Economic Benefit, and Quality of Life. These objectives apply to all system users and modes. The corridor-specific objectives and their rationale are explained in **Table 5**.

Table 5: Corridor-specific Goals, Objectives, and Rationale

<i>Goal</i>	<i>Objective</i>	<i>Rationale</i>
Modal Choice	Providing choices for user segments	Users can select the mode that provides the best service time, least cost and highest reliability
	Providing connectivity between modes	User segments are not prohibited or deterred from using a mode because of difficulty in transferring
	Connectivity between activity centers / Seamless transition between modes	Users can easily access or move to and between all activity centers within and outside of Michigan  Transferring goods or people between rail, air, water, and roadways should take place with the least possible amount of delay and cost so that each segment can minimize the cost of travel
Freight Adequacy	Support for Michigan businesses and industry / freight shippers and haulers	The economic base of Michigan includes manufacturers, agricultures, forest products, and retailers each of who ship and receive goods traveling over Michigan's transportation system. Businesses and industry should expect a system that is safe and designed and maintained to modern standards.  Michigan is one of the leading states for nation and international trade. The nation depends on Michigan's transportation system.
	Improve economic competitiveness	A safe, well designed system reduces a business or industry's transportation cost.

### 4.3 Integrating Performance Measures and Strategies

The findings and evaluations resulting from these measures are the basis for identifying existing and future corridor conditions that may:

- Provide opportunities for economic growth; or
- Identify barriers that may hinder economic development such as missing or deficient links, and restrictions or barriers to movement.

Several key mode-specific and intermodal barriers and opportunities that could be addressed by applying the multi-modal, integrated strategies discussed in the *MI Corridors of Highest Significance Profile Summary – Executive Summary I* include:

#### Barriers:

- Congestion on all modes;



- Connectivity between modes;
- Unsafe roadways;
- Roadway designs below standard (vehicle clearances, other geometrics);
- Lack of freight rail service/commuter rail service;
- Lack of independent mobility for the elderly;
- Roadway quality; and
- Peninsulas – These create end points rather than through locations along corridors that could serve greater populations and industrial sectors.

**Opportunities:**

- Air freight growth;
- Emerging health care industry;
- Emerging technology centers and industries (products are not necessarily large volumes of heavy quantities and transportation may be electronic and outside the MDOT systems);
- Promoting access management to reduce congestion and improve safety;
- Sustainable land use to improve acceptance of transit Travel Demand and Transportation System Management alternatives;
- Attracting tourist by providing long-distance bicycle routes;
- Providing trucks safe places to rest; and
- Potential for short-haul rail freight.

## **Chapter 5. International Border Crossings and Issues**

The world's largest bilateral trade relationship exists between the United States and Canada, with Michigan positioned as a leader in international trade. Goods and people moving across Michigan's borders significantly impact the economies of Michigan and Ontario, and the economies of the United States, Canada and other nations.

Michigan's International Border Crossings are vital links for international commerce and are critical to the well-being of the local, state and national economies. Canada's exports to the US constitute one-third of its GDP and 87 percent of its exports. US trade with Canada averages \$1.2 billion per day, more than US trade with the entire European Union. Over the past 30 years, US/Canada cross-border trade has grown faster than the GDP, at an annual rate of approximately 11 percent.

Two-thirds of the US/Canada trade moves by truck with the remaining trade moving by rail, water, and air. Most of the truck flows crossing the 4,000-mile US/Canadian border use 22

principal crossings. From 2001 through 2005 approximately 43 percent of all US/Canada trade moved through just two of Michigan's international crossings.<sup>1</sup> These are the crossings in Detroit and Port Huron.

MDOT's International Border Crossings addressed in this report include:

<b>Land-Based Crossing</b>	<b>Location</b>
Ambassador Bridge	Detroit
Detroit-Windsor Tunnel	Detroit
Blue Water Bridge	Port Huron
International Bridge	Sault Ste. Marie
Rail Bridge	Sault Ste. Marie
Rail Tunnel	Port Huron
Detroit-Windsor RR Tunnel	Detroit
Blue Water Ferry	Marine City
Walpole-Algonac Ferry	Algonac
Detroit-Windsor Truck Ferry	Detroit

<b>Airport Ports of Entry</b>	<b>Location</b>
Detroit Metropolitan Airport	Detroit
Gerald R. Ford International	Grand Rapids
Bishop International	Flint
MBS International	Saginaw
Kalamazoo/Battle Creek	Kalamazoo
Sawyer International	Gwinn
Chippewa County International	Sault Ste. Marie
Oakland County International	Pontiac
St. Clair County International	Port Huron

Each of these crossings is also discussed and identified in the *MI Corridors of Highest Significance Profile Summary – Executive Summary I* in connection with the corridors to which they are linked and in the appropriate *MI Transportation Plan* Economic Region in the *Economic Regions Corridor Summary*.

## **5.1 MDOT's Vision and Policy for its International Border Crossings**

The Michigan Department of Transportation (MDOT) recognizes that in order for Michigan to maintain its economic competitive advantage in international commerce and to support a healthy, growing economy within the state, it must assume the responsibility and challenges to maintain and ensure the safe, seamless movement of people and goods traveling via all modes of transportation through its international border crossings. MDOT has demonstrated its

---

<sup>1</sup> *Truck Freight Crossing the Canada-US Border*, Study by Eastern Border Transportation Coalition (EBTC), September 23, 2003. and USDOT, Bureau of Transportation Statistics, Transborder Surface Freight Database, 2006, [www.bts.gov/](http://www.bts.gov/)

recognition of this through its International Border Crossing Vision Statement and its International Border Crossings Policy.

“It is Michigan’s vision to establish and maintain a transportation border that allows for the seamless movement of people, goods, and services in a cost-efficient, timely, safe and secure manner.”<sup>2</sup>

Recognizing Michigan’s vision and common goals with Ontario to establish and maintain a transportation border that facilitates and encourages the seamless, safe and secure transport of goods, people and services in a cost-efficient and timely manner, the State Transportation Commission adopted the following policy statements on October 28, 2004.

“The Michigan Department of Transportation shall:

1. Work to assure adequate transportation capacity at Michigan’s border crossings to facilitate, advance and, in part, provide for the seamless movement of people and goods between Michigan and Ontario;
2. Provide for the protection of and upgrade the transportation facilities on our borders through collaborative initiatives with the private sector and other governmental agencies to provide an appropriate level of redundancy among crossings and to ensure continued access for international trade and commerce between the US and Canada;
3. Study needs for improving and expanding the transportation structures and infrastructures and identify advancing technologies through persistent research and analysis in order to continue to adapt to the demands of international trade and commerce;
4. Work to enhance cooperation, coordination, and communication with US and Canadian border inspection and transportation agencies, local and regional governments, private operators, crossing users, neighborhoods, and other stakeholders affected by border crossings, in order to facilitate continued improvement to both the mobility and safety of border crossings;
5. Collaborate closely with state, local, provincial and private sector partners to proactively address topics of mutual interest that impact border crossings;
6. Work to increase federal funding for border transportation infrastructure capacity and safety improvements, and to use funding effectively to achieve the intent of this policy;
7. Work cooperatively with the other agencies responsible for improvements to border inspection processes, and encourage them to facilitate the movement of low-risk passengers and cargo; and
8. Provide adequate inspection staffing levels, and implement the utilization of technological advancements that can reduce border transit times while enhancing security.”

---

<sup>2</sup> As stated in MDOT’s Five-Year Transportation Programs, 2006-2010, p. 36,

## 5.2 Michigan's International Border Crossings

Unlike land border crossings, every Michigan border crossing relies on bridge, tunnel, marine, or aviation infrastructure. Michigan has four vehicular and three rail International Border Crossings. Three ferries operate between Michigan and Canada, and nine airports also serve as international ports of entry. The vehicular crossings include the International Bridge in Sault Ste. Marie, the Blue Water Bridge in Port Huron, the Ambassador Bridge and the Detroit-Windsor Tunnel in Detroit, all of which have a different governance structure. Michigan shares the ownership of the International Bridge in Sault Ste. Marie and Blue Water Bridges in Port Huron. Michigan owns the US half of the International Bridge and the St. Mary's River Bridge Company owns the Canadian half. Michigan owns the US half of the Blue Water Bridge and the Blue Water Bridge Authority owns the Canadian half. Both the St. Mary's River Bridge Company and the Blue Water Bridge Authority are Canadian Crown/government-owned corporations. The Ambassador Bridge is privately-owned and operated. The Detroit-Windsor Tunnel is owned by the cities of Detroit and Windsor. It is privately operated. The three rail crossings include a railroad bridge in Sault Ste. Marie and two tunnels, one in Port Huron and one in Detroit. Michigan's major international airports are Detroit Metropolitan Airport in Wayne County, Gerald R. Ford International Airport in Grand Rapids, Bishop International Airport in Flint, MBS International in Saginaw, Kalamazoo/Battle Creek International Airport in Kalamazoo, Sawyer International Airport in Gwinn, and Chippewa County International Airport in Sault Ste. Marie. (NOTE: Willow Run, the second largest cargo airport in the state, is not an international airport but a "Landing Rights Airport." The United States Customs & Boarder Protection (CBP) defines a Landing Rights Airport as "any airport, other than an international airport or user fee airport, at which flights from a foreign area are given permission by CBP to land. Aircraft landing at an international airport do not need permission to land, however advanced notice of your ETA to CBP must be transmitted for each flight.)

Three ferries operate between Michigan and Ontario, Canada; two are passenger, one is a truck ferry. The truck ferry is the only crossing with no restrictions that is permitted for hazardous and overweight vehicles. The International Bridge and the Blue Water Bridge also permit hazardous materials, but with restrictions.

**Table 6: International Border Crossings and Ports of Entry**

<i>Crossing</i>	<i>Location</i>	<i>Type / capacity</i>
Ambassador Bridge	Detroit	Vehicular Bridge / 4 lanes
Detroit-Windsor	Detroit	Vehicular Tunnel / 2 lanes
Blue Water Bridge	Port Huron	Vehicular Bridge / 6 lanes
International Bridge	Sault Ste. Marie	Vehicular Bridge / 2 lanes
Rail Bridge	Sault Ste. Marie	Railroad Bridge
Rail Tunnel	Port Huron	Railroad Tunnel
Rail Tunnel	Detroit	Railroad Tunnel
Blue Water Ferry	Marine City	Passenger
Walpole-Algonac Ferry	Algonac	Passenger
Detroit-Windsor Truck Ferry	Detroit	Vehicular and Passenger
Detroit Metropolitan Airport	Detroit	Commercial Airport
Gerald R. Ford International	Grand Rapids	Commercial Airport
Bishop International	Flint	Commercial Airport
MBS International	Saginaw	Commercial Airport
Kalamazoo/Battle Creek International	Kalamazoo	Commercial Airport
Sawyer International	Gwinn	Commercial Airport
Chippewa County International	Sault Ste. Marie	Commercial Airport
Oakland County International	Pontiac	General Aviation Airport
St. Clair International	Port Huron	General Aviation Airport

Source: Federal Aviation Administration, 2006 and Michigan Department of Transportation, 2006

### 5.2.1 Value at Crossings

The US and Canada are each other's largest trading partner. In 2002 Canada was the origin for 16.5 percent of all imports to the US, and the US sold 19 percent of all its goods to Canada. Canada/US trade supports more than two million jobs in Canada<sup>3</sup> and 5.2 million US jobs, including approximately 174,000 jobs in Michigan.<sup>4</sup> Michigan's International Border Crossings are the nation's principal gateway for international trade with Canada. Of the total US trade with Canada, over \$361 billion in 2003 and over \$458 billion in 2005, most moves through Michigan's three ports of entry Detroit, Port Huron, and Sault Ste. Marie. During 2001 – 2005, between 43 percent and 47 percent of all US/Canadian trade by value moved through these three ports. The Ambassador Bridge alone carries approximately 25 percent of all US/Canadian trade.

Two-thirds of the value of US/Canadian trade is moved by truck. Nationally this percentage has been dropping from a high of 76.5 percent of the value in 1995 to a new low of 64.3 percent of the value or \$295 billion moving by truck in 2005.

In Michigan in 2005, \$47.8 billion of the value of trade was moved by truck and 27.4 percent or \$19.7 billion was moved by rail. Unlike the decreasing national trend for freight values being moved by truck, in Michigan between 2001 and 2005, the value moved on by truck has

<sup>3</sup> The Canadian Department of International Trade.

<sup>4</sup> According to a 2003 study commissioned by the Canadian Embassy and based on 2001 data.

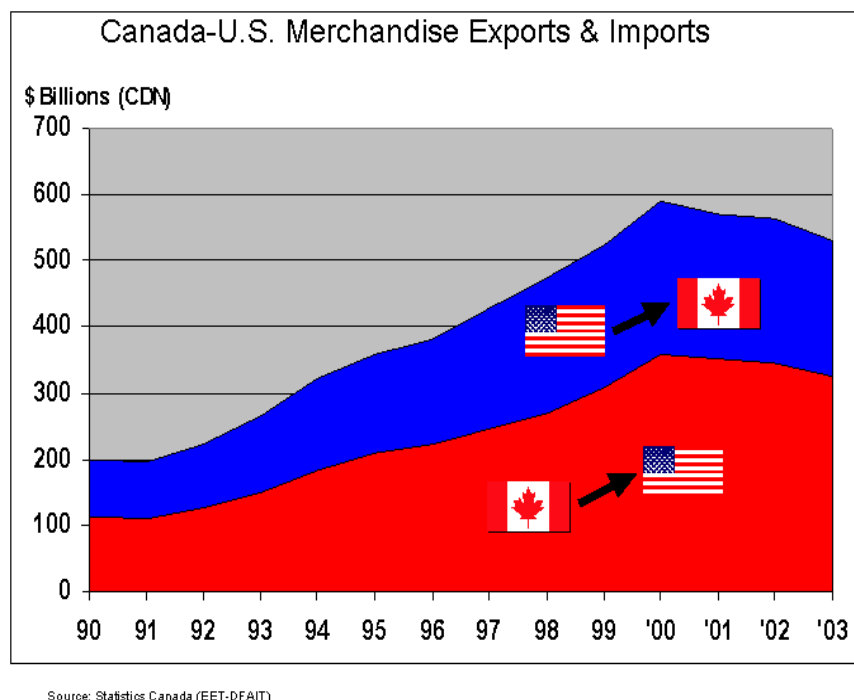


increased from 62.9 percent to 66.4 percent. The value share moved by rail has decreased from 34.1 percent in 2001 to 27.4 percent in 2005. This increased value on trucks may be in part due to the abandonment of rail lines in Michigan.

In terms of origin and destination of trade with Canada, Michigan, as compared to all US states, is Canada's largest trading partner. Michigan shipped and received a high of 19.3 percent (\$65.8 billion) in 2002 and a low of 15.7 percent (\$71.9 billion) in 2005 of all Canadian trade.

Michigan is also Mexico's third largest trading partner as the originating and destination state for a low of 9.9 percent (\$23.6 billion) in 2005 and a high of 14.2 percent (\$28.2 billion) in 2002 of all US trade with Mexico.

**Figure 6: US Canada Exports and Imports**



Source: EBTC, The Importance of Efficient Canada/US Border Crossings, <http://www.ebtc.info/files/ebtc-whitepaper.doc>

One reason for Michigan ranking as among both Canada and Mexico's largest trading partners may be the growth in the automotive industries in both Mexico and Canada. Based on national figures the top five commodities by value moved by land in North America<sup>5</sup> are:

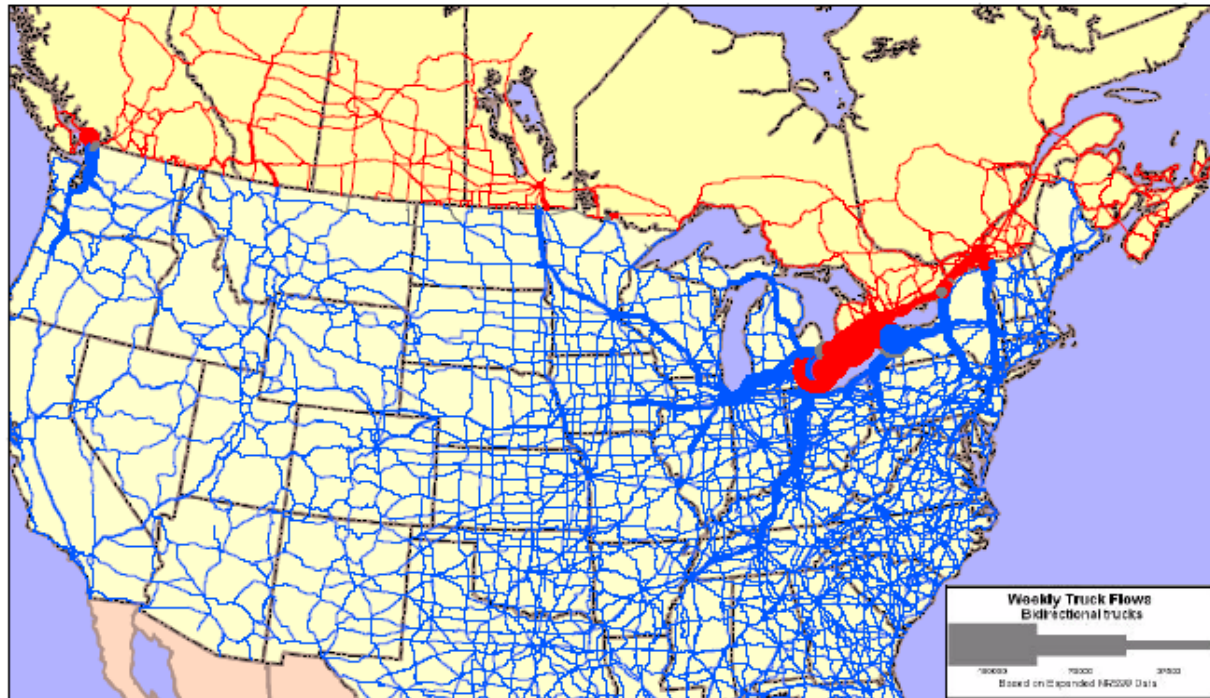
- Vehicle parts and accessories;
- Machinery, boilers, and mechanical appliances and parts;
- Electrical machinery, equipment, parts, TV and sound recording equipment;

<sup>5</sup> USDOT, Bureau of Transportation Statistics, Transborder Surface Freight Database, 2006, [www.bts.gov/](http://www.bts.gov/)

- Minerals, oils, fuels; and
- Plastics.

According to 2003 merchandise trade figures from *Statistics Canada*, on average Michigan and Canada exchange \$177 million daily ([www.CanadianAlly.com](http://www.CanadianAlly.com)). In 2003, Michigan sold over \$8.6 billion in auto parts to Canada and in turn bought more than \$21 billion in automobiles and \$7.8 billion in trucks.

**Figure 7: 1999 Weekly Truck Trips Crossing US / Canada Border**



Note: Trip data was expanded and assigned to the combined Canada-U.S. highway system. The bandwidth indicates weekly Canada-U.S. truck trips. The corridor between Detroit, Toronto, and Buffalo is heavily traveled, with the resulting wide bandwidths causing some loss of roadway detail in that area.

Source: <http://www.ebtc.info/PDF/Executive%20summary.pdf> from Executive Summary, 1999 Roadside study, Eastern Border Transportation Coalition (EBTC), September 2003.

**Table 7: US – Canada – Mexico – Michigan Trade (in Billion \$)**

	<i>All Modes Total US / Canada</i>	<i>Trucks Total US / Canada</i>	<i>% trucks</i>
1995	\$243.563	\$186.388	76.5%
1996	\$263.716	\$195.824	74.3%
1997	\$289.650	\$210.989	72.8%
1998	\$299.853	\$223.663	74.6%
1999	\$330.000	\$242.041	73.3%
2000	\$365.117	\$257.642	70.6%
2001	\$346.515	\$234.824	67.8%
2002	\$341.256	\$236.244	69.2%
2003	\$362.390	\$240.949	66.5%
2004	\$408.613	\$268.659	65.7%
2005	\$458.309	\$294.918	64.3%



	<i>Total US / Canada Ports</i>	<i>Total Port of Detroit</i>	<i>% Detroit of total US</i>	<i>Total Port Huron</i>	<i>% Port Huron of total US</i>	<i>Total Sault Ste. Marie</i>	<i>% Sault SM of total US</i>	<i>% Detroit + Port Huron + Sault Ste. Mar.</i>
2001	\$346.515	\$91.906	26.5%	\$55.539	16.0%	\$1.917	0.6%	43.1%
2002	\$341.256	\$100.800	29.5%	\$57.289	16.8%	\$1.551	0.5%	46.8%
2003	\$362.319	\$101.815	28.1%	\$62.245	17.2%	\$1.978	0.5%	45.8%
2004	\$408.613	\$113.668	27.8%	\$65.880	16.1%	\$2.405	0.6%	44.5%
2005	\$458.309	\$130.336	28.4%	\$68.174	14.9%	\$2.765	0.6%	43.9%

	<i>% Michigan all US / Canada Trade</i>	<i>Trucks Total Michigan / Canada</i>	<i>% Michigan value in trucks</i>	<i>Rail Total Michigan / Canada</i>	<i>% Michigan value on rail</i>	<i>All modes Total US/ Mexico</i>	<i>Total all modes Michigan / Mexico</i>	<i>% Michig an of all US / Mexico</i>
2001	17.8%	\$38.866	62.9%	\$21.072	34.1%	\$200.796	\$27.540	13.7%
2002	19.3%	\$41.887	63.6%	\$22.186	33.7%	\$199.539	\$28.248	14.2%
2003	17.9%	\$40.912	63.2%	\$21.852	33.7%	\$200.457	\$26.708	13.3%
2004	17.0%	\$45.074	64.9%	\$21.189	30.5%	\$224.950	\$24.600	10.9%
2005	15.7%	\$47.766	66.4%	\$19.684	27.4%	\$239.676	\$23.635	9.9%

Source: US DOT, Bureau of Transportation Statistics, Transborder Surface Freight Database  
<http://www.bts.gov>, WSA generated Table, 2006

### 5.2.2 Volumes at Crossings

Nearly 22.8 million vehicles (2005), including 5.5 million trucks (2005), cross Michigan's four vehicular International Border Crossings each year. Between 1990 and 2000 commercial truck traffic more than doubled to 5.3 million trucks per year. The Ambassador Bridge in Detroit and the Blue Water Bridge in Port Huron jointly carry more than 5.2 million truck (2005) crossings per year or 14,345 truck crossings per day. The Detroit Tunnel carries 148,000 trucks and 5.77 million cars per year.<sup>6</sup>

The Blue Water Bridge opened in 1938 and is the fourth busiest US/Canada crossing and the second busiest commercial border crossing between the US and Canada. Truck travel on the bridge has increased from 1.1 million in 1994 to 1.79 million in 2005. In 2005 a total of 5.5 million vehicles crossed the bridge.

The International Bridge at Sault Ste. Marie, which opened to traffic in 1962, is the only vehicular crossing for a 420-mile distance. In 2005 it carried 1.9 million vehicles, including 1.73 million passenger vehicles and 132,172 trucks and 59,115 buses. The International Bridge connects the two cities of Sault Ste. Marie, Ontario (pop. 75,000) and Michigan (pop. 16,000). Based on a 2000 study by the Ministry of Transportation, between 66 and 70 percent of the crossings were by people from the local area crossing for work, recreation and shopping purposes. The bridge also serves the steel, paper and forestry industries and regional tourism. Automobile traffic grew from 1980 to a peak of 3.5 million in 1993 and has been declining steadily due to disparity in Canadian and US currencies. Truck crossings have grown by 123 percent, except for a 2-percent decline in 2003. Trucks contribute approximately 47 percent of toll revenues at the bridge.<sup>7</sup>

**Table 8: US – Canada Border Crossings and 2005 Volumes**

<i>Crossing</i>	<i>Location</i>	<i>Type / capacity</i>	<i>Passenger cars (Millions)</i>	<i>Rank</i>	<i>Commercial Vehicles</i>	<i>Buses &amp; Misc.</i>	<i>US/Canada Rank</i>
Ambassador Bridge	Detroit	Vehicular Bridge 4 lanes	5.86	1	3,445,585	76,660	1
Detroit-Windsor	Detroit	Vehicular Tunnel 2 lanes	5.77	2	148,065	59,117	6
Blue Water Bridge	Port Huron	Vehicular Bridge 6 lanes	3.71	4	1,790,673	8,407	2
International Bridge	Sault Ste. Marie	Vehicular Bridge 2 lanes	1.73	8	132,172	59,115	8

<sup>6</sup> Michigan' International Corridors and Border Crossings Investment Strategy, September 2001, p.2. and Bridge and Tunnel Operators Association monthly traffic reports.

<sup>7</sup> The International Bridge Business Plan 2004-2008, November 2004.

### 5.2.3 Changes in Volumes and Value at Crossings

Traffic forecasts for US/Canada border crossings suggest that while in the short-term, traffic volumes have gone down, in the long-term traffic will increase. Free trade agreements with Canada have reduced constraints on trade and encouraged international traffic. Long-term, traffic at Michigan's four border crossings is expected to grow to 34 million vehicles by 2020, a 36-percent increase. By 2025, auto crossings are expected to increase 44 percent and truck crossings by 60 percent.<sup>8</sup>

Truck growth on the Blue Water Bridge has increased more than 150 percent since 1990 and is forecast to increase another 150 percent by 2030. Passenger traffic is expected to increase 71 percent over the same period. By 2020 the Blue Water Bridge is expected to carry 2.9 million trucks, a 95-percent increase from 2001.<sup>9</sup>

However, from 2000 to 2004, passenger traffic at all four vehicular crossings declined significantly. Several reasons include 9/11, SARS, currency exchange rates, the war in Iraq, increased fuel costs and the large number of these trips that were discretionary, and border inconveniences. Preliminary 2005 data suggests the passenger trend will not level off for several years. The bulk of this change is from same-day passenger trips.<sup>10</sup>

**Table 9: Annual Volumes**

<i>Crossing</i>	<i>2000 Volume (millions)</i>	<i>2004 Volume (Millions)</i>	<i>Change (millions)</i>	<i>Percent Change</i>
Ambassador Bridge	8.81	6.26	- 2.55	- 29%
Detroit -Windsor Tunnel	8.44	5.84	- 2.60	- 31%
Blue-Water Bridge	4.40	3.77	- 0.63	- 14%
Sault St. Marie Bridge	2.55	1.72	- 0.83	- 33%

**Bridge And Tunnel Operator's Association**

**United States – Canada**

**Traffic Report**

		<i>Year-To-Date</i>		<i>Change</i>	<i>Percent</i>
		<i>2004</i>	<i>2005</i>		
<b>Ambassador Bridge</b>	Passenger Cars	6,172,992	5,865,633	(307,359)	-4.98%
	Trucks	3,371,397	3,445,585	74,188	2.20%
	Buses & Misc.	82,029	76,660	(5,369)	-6.55%
	TOTAL	9,626,418	9,387,878	(238,540)	-2.48%
<b>Blue Water Bridge</b>	Passenger Cars	3,761,591	3,714,729	(46,862)	-1.25%
	Trucks	1,799,371	1,790,673	(8,698)	-0.48%

<sup>8</sup> *Mobility is Security*, 2000- 2025.

<sup>9</sup> *Michigan's Investment Strategy*,

<sup>10</sup> Ontario-Michigan Border Crossing Traffic Study, August 2000 and 2004 Travel Demand Model Update for the Detroit River international Crossing Study. Pp 19-23.



	Buses & Misc.	7,883	8,407	524	6.65%
	TOTAL	5,568,845	5,513,809	(55,036)	-0.99%
<i><b>Detroit-Windsor Tunnel</b></i>	Passenger Cars	5,781,920	5,774,705	(7,215)	-0.12%
	Trucks	159,786	148,065	(11,721)	-7.34%
	Buses & Misc.	59,468	59,117	(351)	-0.59%
	TOTAL	6,001,174	5,981,887	(19,287)	-0.32%
<i><b>Sault St. Marie Bridge</b></i>	Passenger Cars	1,652,064	1,735,373	83,309	5.04%
	Trucks	133,773	132,172	(1,601)	-1.20%
	Buses & Misc.	63,545	59,115	(4,430)	-6.97%
	TOTAL	1,849,382	1,926,660	77,278	4.18%
<i><b>TOTALS</b></i>	Passenger Cars	17,368,567	17,090,440	(278,127)	-1.31%
	Trucks	5,464,327	5,516,495	52,168	-6.82%
	Buses & Misc.	212,925	203,299	(9,626)	-7.46%
	GRAND TOTAL	23,045,819	22,810,234	(235,585)	-15.58%

Source: Bridge and Tunnel Operators Association

In terms of the International Bridge, the International Bridge Authority (IBA) predicts that in the short-term, traffic is expected to decline. The IBA projects an overall decline of 11 percent from 2003 to 2008, which includes a 12-percent decline in automobile traffic. One reason given for this decline is the heightened security.

### 5.2.4 Aviation Crossings

Michigan has seven commercial and two general aviation airports identified by the Federal Aviation Administration as international airports. These airports provide scheduled service to both passengers and air cargo. Major international air cargo airports include the Detroit Metropolitan Airport which handles over 375,000 tons of air cargo annually, Gerald R Ford airport in Grand Rapids, which handles over 120,000 tons annually, and Bishop International airport in Flint which handles over 50,000 tons of air cargo annually.<sup>11</sup> While not all of this is international cargo, it is the availability of this international service that is important to Michigan's economic vitality. Willow Run airport is Landing Rights Airport and is the second largest cargo airport in Michigan and handles a large volume of international air cargo.

All nine of these airports carry international passengers. The Detroit Metropolitan Airport ranks 11th in total passengers<sup>12</sup> and has 34 daily international flights, and over three million international passengers annually.

<sup>11</sup> [www.faa.gov/airports/](http://www.faa.gov/airports/) 2005 data

<sup>12</sup> [http://www.michigan.gov/aero/0,1607,7-145-6771\\_7016---,00.html](http://www.michigan.gov/aero/0,1607,7-145-6771_7016---,00.html)

### 5.2.5 Ferry Crossings

Three Maritime Ferry Lines provide regularly scheduled crossings between Canada and Michigan. The Detroit/Windsor Truck Ferry, started in 1990, has 10 round-trips scheduled each day. Fees range from \$30 per passenger vehicle, to \$250 for large vehicles (14-foot – 16-foot wide by less than 80-foot truck with a GVW less than 80,000 lbs.) to \$1,650 for super-loads over 150-feet. The Walpole-Algonac Ferry line is over 100-years old and operates two ferries, one carrying 12 and one carrying nine passenger cars operating year-round departing approximately every 20 minutes from early morning until 10 p.m. The Blue Water Ferry also operates seven days a week, year-round. It has been carrying passenger cars and small trucks since 1948 in the Port Huron area. The truck ferry is the only permitted hazardous materials and overweight vehicle crossing in the Detroit area.

## 5.3 Issues

Maintaining and managing Michigan's International Border Crossings involves dealing with a number of diverse and complex issues. Capacity, congestion, delays, growth in international trade, homeland security, deteriorating physical conditions of aging infrastructure, the challenges of working with two national governments, and planning for continuously evolving inspection procedures and regulations are some of the most critical border issues.

### 5.3.1 Capacity, Congestion and Delays

Michigan's International Border Crossings rank among the top commercial vehicle crossings on the US/Canada border. Businesses and manufacturers in the US, Canada and Mexico depend on parts and products shipped across international borders. Many of these businesses operate with limited inventories and rely on receiving shipments just in time to match their product development and delivery schedules.

The events of September 11, 2001 and continuing growth in commercial truck traffic have increased border delays as much as two hours during peak periods. Delays are caused by a number of factors including inadequate staffing at federal inspection facilities, inadequate inspection facilities, different and confusing customs and immigration policies on each side of the border, inadequate connectivity and access to interstates, and current design and lane capacity limitations of International Border Crossings. As shown on **Table 8**, US/Canada-Mexico-Michigan trade, it is clear that the value of international trade is continuing to grow. Traffic volumes for both passengers and trade are also growing long-term. Some studies have shown that Detroit border crossings may reach capacity in five to 10 years.<sup>13</sup>

Congestion and delays at border crossings have been an issue for several years and, if not addressed, can impact individual business and ultimately the overall economy. If border congestion and delays, including delays due to security inspections are not addressed, annual

---

<sup>13</sup> *Mobility is Security*, Executive Summary, p.5

production in the United States would be \$10.6 billion less and there would be almost 80,000 fewer jobs in the US.<sup>14</sup>

### **5.3.2 Homeland Security**

Michigan's International Border Crossings and trade corridors are critical to the well-being of the local, state, and national economies and therefore critical to state and national security. Security and transportation are, by nature, in conflict. Security requires stopping or delaying traffic to verify the integrity of the occupants and contents being transported while the transportation agencies seek to provide a seamless flow of vehicles.

With the terrorist events of September 11, 2001 increased security efforts at the international borders initially increased congestion and delays. MDOT has actively worked with the US Department of Homeland Security to minimize the impacts of delays while increasing security measures. MDOT's strategies and initiatives are defined in detail in the *Security Technical Report* produced as part of this *MI Transportation Plan* process. A summary of MDOT's Homeland Security activities are described in **Chapter 6, Homeland Security Strategies and Initiatives**, of the *Security Technical Report*.

### **5.3.3 Physical Conditions of Infrastructure**

Like any system, some border crossing facilities are in good condition, while others are in need of short-term repair or long-term replacement. For example, the Blue Water Bridge is in good condition. Work at the 40-year old Blue Water Bridge focuses on providing additional capacity at the plaza. However, many of the bridges and tunnels which make up Michigan's International Border Crossings system were constructed 75 years ago such as the Detroit/Windsor crossings and are in need of significant long-term repair, reconstruction or modernization. The needed improvements for this aging infrastructure in many cases exceed their original construction costs. Funding for these and other MDOT facilities are limited.

### **5.3.4 Intergovernmental Challenges**

Projects and issues related to International Border Crossings require working with multiple levels of government including local, state, provincial, and US and Canadian federal governments, each with its own set of regulations and organizational and administrative structures. Coordination, communication, and cooperation between all agencies involved in crossing ownership, operation, maintenance, and administration are essential to having an efficient, safe, and secure international border crossing.

---

<sup>14</sup> Purpose and Need and Feasibility Study, [www.partnershipborderstudy.com](http://www.partnershipborderstudy.com)

## 5.4 Physical Conditions and Needs

Because many of the International Border Crossing facilities are privately-owned, this report only presents a discussion of those facilities which MDOT owns or is directly involved in funding its improvement.

### 5.4.1 International Bridge

The International Bridge at Sault Ste. Marie opened to traffic in 1962. It is the only vehicular crossing for a 420-mile distance. It is operated and managed by the Joint International Bridge Authority (JIBA) and International Bridge Administration (IBA). The January, 2003 inspection report concluded that the International Bridge is in good overall condition and the structure was well maintained. Ten major capital projects in addition to ongoing day-to-day maintenance will be needed over the next 30 years to insure the continued structural integrity of the bridge. The International Bridge will need a complete re-decking in 15 years. The cost estimate for these projects is \$76 million. When inflation is taken into consideration the projections will increase to \$164 million, eight times more than it cost to build the bridge and its approaches.<sup>15</sup>

### 5.4.2 Blue Water Bridge

The Blue Water Bridge opened in 1938 as a three-lane, 6,200 foot cantilever truss bridge. The Bridge connects Port Huron, Michigan with Sarnia and Point Edward, Ontario. A parallel three-lane structure was added in 1997 and the original three lanes closed and major deck rehabilitation was completed. In 1999 the bridge reopened as a six-lane facility.

MDOT is currently studying potential improvements to the US Plaza at the Blue Water Bridge. The Environmental Impact Statement (EIS) is due to be completed in 2008 and construction completed in 2012. Backups of vehicles waiting to enter the United States are common. These occur during high volume periods especially on Tuesdays, Wednesdays and Thursdays for trucks and summer and holiday weekends for cars. Backups partially result from inadequate inspection facilities including a limited number of inspection booths and a plaza layout that creates traffic conflicts between cars and trucks on the plaza, over the bridge and along I-94 and Canadian Highway 402. Unless improvements are made, backups will worsen as traffic continues to grow.

The plaza must accommodate security measures to allow federal inspection agencies to maintain a secure border. Following the terrorist attacks of September 11, 2001 more staff and new technologies are being introduced at the border, and these also will need to be accommodated in an expanded Blue Water Bridge plaza footprint. Improvements to the plaza may present opportunities to improve local access from the bridge and plaza to downtown Port Huron and the St. Clair riverfront. MDOT anticipates completing the environmental clearance process in 2008. Construction of the expanded plaza will likely occur between 2010 and 2015.

---

<sup>15</sup> International Bridge Business Plan 2004-2008, November, 2004. p.14.

### **5.4.3 Ambassador Bridge and Detroit-Windsor Tunnel**

The Ambassador Bridge is a 9,200-foot long, privately-owned and operated suspension bridge that opened in 1929 and has been renovated numerous times. It has two lanes in each direction. Currently, one is used for cars and one for commercial vehicles.

The Detroit-Windsor Tunnel opened in 1930. It is one-mile long and is 75-feet below the bottom of the Detroit River. The tunnel has one lane in each direction, is lighted and ventilated. It has a vertical clearance of 13'2" and a 330-degree turn which restricts the types of commercial vehicles that can use the tunnel. The tunnel is owned by the Cities of Detroit and Windsor and is privately operated.

An in-depth analysis of the conditions of the Ambassador Bridge and Detroit-Windsor Tunnel were conducted as part of the Canada - United States – Ontario - Michigan Border Transportation Partnership for the *Detroit River International Crossing Study*. This study identified the major problems at these crossings as a lack of sufficient capacity to meet existing and growing demand, the need for improved connectivity to freeways, and the need to improve safety and enhance security.

Based on outcomes of this study, MDOT initiated an Environmental Impact Statement (EIS) to identify a new or improved international crossing of the Detroit River. The Detroit River International Crossing (DRIC) study is expected to be complete in 2008.

## **5.5 MDOT's Border Strategies, Initiatives, and Investments**

MDOT is committed to maintaining and enhancing its highway and rail International Border Crossings. Over the past 10 years, MDOT has invested close to \$1.5 billion in its corridors and crossings. During that time MDOT also participated in drafting federal transportation legislation supporting border crossings and trade corridors, worked to stop legislation that would profoundly clog border crossings, supported increased funding for US Customs border operations, completed an intergovernmental agreement with Canada to study the feasibility of a new international crossing, actively participated with Homeland Security to identify and implement protective measures for US crossings, conducted truck and traffic surveys to identify international truck and traffic movements, and sponsored or participated in trade corridor planning studies and management strategy development.

Through proactive, aggressive advocacy, MDOT plans to work closely with all parties committed to the concept of a seamless US/Canada border while addressing legitimate security concerns and providing for critical infrastructure needs. MDOT's investments and initiatives include strategic objectives supported by an action plan.

### **5.5.1 MDOT International Border Crossing Strategy and Action Plan**

MDOT's Strategic Objectives for 2000 – 2005, which it continues to support, include:



- Improve movement of people, goods and services in a safe, secure and efficient manner across the US/Canada border to connect with existing national, provincial, and regional transportation corridors;
- Improve vehicle flows on Michigan's highways and rail corridors, enhance safety and security, reduce travel times and increase their predictability to support the fast-growing international trade in the region;
- Expand and improve collaboration and coordination of planning, programming and border operations with Canada to expedite cross-border vehicle and cargo movements;
- Conduct research, planning, feasibility studies and pilot projects related to trade corridors and border crossings;
- Support changes to federal laws, regulations and policies that improve the flow of trade across the US/Canada border while maintaining national security, including border inspection, processing policies and border staffing needs; and
- Support the development and implementation of Intelligent Transportation Systems that enhance border-crossing efficiency and improve vehicle movement on Michigan's trade corridors.

MDOT's five-year action plan (2000-2005) for International Border Crossings consisted of three major initiatives. MDOT will continue to support these initiatives for 2005-2010. They include:

- Invest in border and corridor infrastructure focusing on systematically repairing and rebuilding the infrastructure and connecting the crossings to the interstate freeway system;
- Enhance coordination and cooperation with federal, state, provincial, regional and local partners; and
- Advocate for federal policies that address border and corridor infrastructure needs that improve the movement of people and goods across the US/Canada border.

### **5.5.2 Past Investments and On-going Initiatives**

MDOT has demonstrated commitment to its border crossings by investing over the past 10 years close to \$1.5 billion in them and the transportation corridors that serve them. Over \$1 billion is planned for investments over the next eight years.

**Table 10: Border Crossing and Supporting Corridors Investments 1995 - 2005**

	1995- 2000	2001-2005
Ambassador Bridge Gateway - Detroit	\$ 8,000,000	\$114,000,000
Blue Water Bridge – Port Huron	\$83,000,000	\$2,000,000
International Bridge – Sault Ste. Marie	\$ 10,000,000	\$ 10,000,000
I-94 - Port Huron to Indiana	\$ 356,000,000	\$ 472,000,000
I-69 - Port Huron to Indiana	\$ 117,000,000	\$ 77,000,000
I-75 – Detroit to Ohio	\$ 141,000,000	\$ 93,000,000
I- 94 and I-75 - ITS Development	\$ 20,000,000	\$ 000
High Speed Rail – Detroit to Chicago	\$ 10,000,000	\$ 15,000,000
Detroit Intermodal Freight Terminal	\$ 000	\$ 1,000,000
<b>TOTAL</b>	<b>\$ 745,000,000</b>	<b>\$ 801,000,000</b>

**Detroit – Ambassador Bridge Gateway Project:** Over 9,000 trucks cross the Ambassador Bridge every day, making it the busiest truck crossing in North America. MDOT's on-going \$206.1 million Ambassador Bridge Gateway project will provide direct interstate access to I-75, I-94, and I-96 where none currently exist, improve traffic flow to and around the bridge, reduce cross border traffic times and increase their predictability. Specific accomplishments when completed in 2009 will include the reconstruction of I-75 in the vicinity of the Gateway Plaza , a new pedestrian bridge across I-75, new welcome center, and reconstructed Fort Street (M-85) adjacent to the plaza.

**Detroit River International Crossing Study (DRIC) - Proposed new crossing:** Based on findings from the *Ontario - Michigan Border Transportation Feasibility Study*, a new Detroit River International Crossing (DRIC) is being evaluated. In January 2004, the partnership produced a final Planning/Need and Feasibility Study Report. This report identified a long-term strategy to meet the needs of the transportation network serving southeastern Michigan and southwestern Ontario. The Detroit River International Crossing (DRIC) Study is a bi-national effort to complete the environmental study processes for the United States, Michigan, Canada and Ontario governments. The study will identify solutions that support the region, state, provincial and national economies while addressing civil and national defense and homeland security needs of the busiest trade corridor between the United States and Canada. The DRIC study is currently evaluating alternative crossing locations south of the existing Ambassador Bridge crossing, working to eliminate from further study, alternatives that are shown to have the worst impact to the study area, and is proceeding to seek environmental clearance for a new crossing. Public meetings are currently underway and the partnership is seeking public input on community issues and the project. Environmental clearance is anticipated in 2008, followed by design and construction of the crossing to be completed in 2013.

**Port Huron – Blue Water Bridge:** In 1997, construction of a second span costing \$41.4 million and \$6 million in plaza improvements were completed. In addition \$21.3 million in repairs were completed in 1999 for the first span. In 2001, \$8.5 million in improvements were made to enhance truck processing and reduce congestion. An additional \$4.1 million was spent from 2000-2005 for resurfacing and to improve access routes to the bridge and \$1.8 million for capital improvements.

Currently MDOT is in the process of completing an Environmental Impact Statement to identify a preferred alternative that would expand the existing Blue Water Bridge plaza. As part of this project the Black River Bridge and approaching I-94/I-69 corridor will also be reconstructed. This improvement will separate international traffic from local traffic and will improve both the safety and security leading to and from the new plaza. In total MDOT estimates this plaza and corridor improvement project will cost over \$400 million and will be completed between the 2010 and 2015 time-period.

**Sault Ste. Marie – International Bridge:** From 1996-2000 \$10 million and from 2000-2005 an additional \$10 million in MDOT funding was spent on preservation and capital improvement for the Bridge. Through agreements with Transport Canada and the St. Mary's River Bridge Company a new International Bridge Authority was created. This Authority ensures the preservation of this crossing for the next 40 years. The five-year (2004-2008) Capital Improvement Program for the Bridge recommends \$1.3 million in security enhancements and approximately \$900,000 in other improvements, including a new concrete overlay.

**Rail Corridor Projects:** MDOT supports and continues to invest in the development of the High Speed Passenger Rail Initiative between Detroit and Chicago. From 1996-2000, approximately \$10 million was invested in its feasibility analysis and development. From 2000–2005, \$15 million was invested in track improvements. MDOT also invested \$18 million in the first phase of the Detroit Intermodal Freight Terminal project, intended to facilitate mode to mode transfers between truck, rail and shipping containers.

### **5.5.3 US/Canada Discussions and Policy Initiatives**

To address the needs of Michigan's border crossings, MDOT actively supports the development and implementation of federal policies and programs that address the needs of states bordering Canada. MDOT also actively works with decision makers on both sides of the border to improve the seamless movement of people and goods in a cost-efficient, timely and safe manner. Key groups include:

- The Eastern Border Transportation Coalition (EBTC);
- The Transportation Border Working Group (TBWG);
- The US-Canada-Michigan-Ontario Border Transportation Partnership;
- The Joint International Bridge Authority (JIBA);
- The Blue Water Bridge Authority (BWBA);
- The Detroit International Bridge Company/The Canadian Transit Company;
- The Detroit and Canada Tunnel Corporation;
- The Bridge and Tunnel Operators Association (BTOA);
- The I-94 International Trade Alliance;
- The Great Lakes Trade Corridor Association;

- The Canadian-American Border Trade Alliance (CAN-AM BTA); and
- The I-69 Mid-Continental Coalition.

MDOT support includes participation in the development of TEA-21 and SAFETEA-LU borders programs. These include the Comprehensive Border Infrastructure Program (CBI) and the National Corridor Planning and Development Program (NCPD), support to increase funding for US Customs and Immigration to modernize operations, and completion of the intergovernmental agreements for the International Bridge between Michigan and the Canadian government.

#### **5.5.4 Proposed Investments 2005 - 2030**

During the next five years, the MDOT State Transportation Improvement Program (STIP) FY 2006 to FY 2010 includes funding commitments to repair and maintain MDOT's bridges and borders including \$15 million to the Blue Water Bridge and \$110 million to the Border Infrastructure Program.

MDOT plans to invest close to a billion dollars in International Border Crossings and corridor improvements between 2005 and 2030. Specifically, MDOT intends to invest as follows:

**Detroit-Windsor Border Strategy:** As discussed in **Section 5.3.2**, Michigan and Ontario are cooperating in studying the need for increased capacity in the Detroit - Windsor area to help accommodate the traffic growth in the area. Michigan is proceeding with a \$206.1 million investment at the Ambassador Bridge Gateway to improve access and to reduce travel times at the existing Detroit crossing. Ontario has signed a Memorandum of Understanding (MOU) with the government of Canada committing \$300 million over the next five years as part of a joint investment to upgrade existing infrastructure on the Ontario approaches to the Windsor - Detroit crossing. The proposed strategy includes:

- Optimizing the use of the existing network;
  - Improve US approaches;
  - Improve Canadian approaches - \$300 million Transport Canadian commitment;
  - Traffic management and ITS - \$30 million MDOT commitment.
- The Ambassador Bridge Gateway Project - \$206.1 million MDOT commitment – will provide direct highway access from the existing Ambassador Bridge to I-75, I-94, and I-96.
- The Detroit River International Crossing (DRIC) study – currently undergoing environmental clearance to provide new capacity.
- Improving border processing;
  - Promote NEXUS (a joint program of Canada and US Customs and Immigration agencies that simplifies border crossing for pre-approved, low-risk travelers.) and FAST (Free and Secure Trade Program: a joint US/Canada initiative that supports moving pre-approved eligible goods across the border and verifying trade

compliance away from the border.) NEXUS and FAST are now offered at 11 border crossings including Port Huron and Detroit.

- Enhancing security; and
- Improving agency coordination.

**Port Huron Border Strategy:** As discussed under **Section 5.3.1** studies, Michigan is completing the environmental process for a new US border station plaza at the Blue Water Bridge. Currently, \$43 million is dedicated through three earmarks in SAFETEA-LU for the plaza. In Ontario, \$115 million (Canadian dollars) will be invested in improvements in the same area.

**Sault Ste. Marie Border Strategy:** Sault St. Marie, Ontario and the Canadian federal government are investing \$15 million to develop a new international truck route linking Highway 17 and the International Bridge to improve the flow of people and goods across the border.

### ***5.5.5 Aviation Strategies, Issues, and Initiatives***

In order to support Michigan's economic vitality, Michigan's transportation system must ensure the aviation system provides seamless and complete access to key activities. The provision of high value economic services, business hospitality, recreation, and just in time production (and other supply chain activities) are directly supported by Michigan's aviation system.

**Border Protection:** There are a number of critical US Border Protection services that must be maintained to effectively serve the residents and businesses of the state and nation. These aviation-related services, provided by federal agencies, are outlined below:

- **United States and Canadian Customs at Airports** - All aircraft entering the United States must notify the Customs officer in charge of the airport of an intended landing at least one hour prior to landing. Failure to notify Customs could result in a fine. Certain airports provide flight notification service which allows a pilot to notify Customs simply by including "ADCUS" (advise Customs) in the remarks section of the flight plan. Certain airports have been designated "user fee airports" and are authorized to charge for costs associated with providing Customs service. User fees may range from \$50 to \$300 depending on the time of service. Pilots check with the Customs officer directly to determine exact fees.
- **Airports of Entry** - Advance notice of arrival time must be furnished to Customs unless otherwise noted the Michigan Airport Directory, US Customs or Canadian Customs publications. Notice to Customs officials may be included in the flight plan if filed in Canada, and the destination is an airport where flight notification service (ADCUS) is available.
- **Landing Rights Airports** - In addition to the advance notice required at Airports of Entry, Landing Rights Airports require the pilot in command to secure advance permission to land from US Customs. There are currently 11 such airports in Michigan.



Unless otherwise noted in the Michigan Airport Directory, US Customs or Canadian Customs publications, one-hour advance notice is sufficient.

An airport is a significant economic engine for its region. Airports support a variety of aviation activities that employ thousands of persons and create millions of dollars in economic benefits. Businesses throughout the state also depend on airports for the movement of goods and personnel. Benefits associated with airports include direct and indirect jobs, wages and expenditures. They also include the effects rippling through the community, enhancing economic activity far from the airport itself. Economic benefits also include expenditures made by those transient passengers who use the airport but spend their money throughout the region. Airports also create savings in time and money as a result of the travel efficiencies they create. Economic benefits also include the intangible effect the airport has on business decisions to locate or remain in a specific area. Finally, and somewhat less tangible are “quality of life benefits” provided by an airport. Examples include police and firefighting support, search and rescue, and recreation. The close proximity of reliable, efficient air service is cited by many as important when choosing where to reside.

## **5.6 Homeland Security Strategies, Initiatives, and Issues**

As stated in its vision statement, “MDOT’s Strategy for its International Border Crossings is to establish and maintain a transportation border that allows for the seamless movement of people, goods, and services in a cost-efficient, timely, safe and secure manner.” To achieve this vision, MDOT actively participates in the protection of critical infrastructure in cooperation with state and federal agency partners in homeland security. MDOT’s security strategy remains focused on the protective measures for the international and national border crossings.

### **5.6.1 Initiatives**

The following includes a brief listing of the various border crossing initiatives currently underway:

- **I-75 at Ambassador Bridge, Gateway Project – City of Detroit, Metropolitan Region:** This \$206.1 million project will address long-term congestion mitigation issues and provide direct access improvements between the Ambassador Bridge and I-75 and I-96.
- **Detroit River International Crossing – Detroit, Metropolitan Region:** The Detroit River International Crossing (DRIC) Study will consider transportation alternatives that improve the border crossing facilities, operations, and connections to meet existing and future mobility and security needs.
- **Blue Water Bridge Plaza Study – Port Huron, Metropolitan Region:** MDOT is investing over \$11.76 million in a study to address future traffic needs at the Blue Water Bridge Plaza in Port Huron. The study will concentrate on identifying capacity-related needs at the plaza without inhibiting the operations of customs and immigrations officers.
- **I-94 Black River Bridge Study – St. Clair County, Metropolitan Region:** (This is part of the Blue Water Bridge Plaza Study) The I-94 Black River Bridge connects the Blue Water

Bridge Plaza to I-94 and I-69, and also connects the north and south sections of the Port Huron metropolitan area. The current structure is obsolete, narrow, and in poor condition. It needs replacement within a few years.

- **National Roadside Survey (NRS) – Truck Freight Crossing the US - Canada Border:** The Eastern Border Transportation Coalition (EBTC), of which MDOT is a member, completed an assessment of the US - Canada commercial vehicle crossings in 1999. It provides a more expansive and significant view of trade and traffic between the US and Canada than previously available. Currently, Transport Canada is leading the new NRS study that is underway with a data and findings report expected in 2007.

### **5.6.2 Maritime Initiatives**

The following includes a brief listing of the maritime initiatives currently underway:

- Border workers were offered advanced hazardous materials transportation enforcement training as well as second wave of carbon tank inspection training. Issues involving the Detroit Truck Ferry were discussed.
- The Transportation Subcommittee has been working with US Coast Guard (USCG) staff to attempt to identify both budget request routing options and also to attempt to identify other program funds that might be available to meet transportation needs. The area of opportunity identified is for both study funds and for immediate contingency measures, mostly in support of potential critical infrastructure “repairs of potential attack damage,” but also in some additional areas of waterway/transportation structure hardening and protection against damage of infrastructure including structures on alternate detour routes in the event of attack damage, the related structures, and various commercial dock and port structures, the commercial docks and piers and others within the Michigan portion of the Toledo Coast Guard command’s area of responsibility.

### **5.6.3 Information Technology Initiatives**

Applying ITS technologies to International Border Crossings can be used to assist in moving traffic efficiently during emergencies and crisis situations. MDOT continues to work with its partners at the Department of Information Technology to implement and to assure secure connections and maintain data backup and recovery systems. MDOT continues to update the MDOT Business Continuity Plan and the Disaster Recovery plan for IT needs. New, updated security systems and programs such as NEXUS and Free and Secure Trade (FAST), are installed or are in progress for key International Bridge crossing locations. By assisting with providing FAST and NEXUS lanes, MDOT is partnering with US Homeland Security Bureau of Customs and Border Protections (previously Customs and Immigration agencies) to improve security while maintaining mobility.

## Chapter 6. Conclusions and Next Steps

As has been stated throughout this report, the economic vitality of Michigan is linked to the quality of its transportation system. This report identifies and profiles the corridors and International Border Crossings whose efficient operations are critical to keeping Michigan economically competitive. This report is only an initial step in identifying and implementing the best strategies, policies, programs, and priorities to address the issues and conditions raised in the *MI Corridor or Highest Significance Profile – Executive Report I* and *Economic Regions Corridor Summaries – Executive Report II*. Several next steps are needed to use the findings to implement a comprehensive corridor-based transportation program that supports Michigan in its efforts to regain its leadership position as a global economic engine.

### 6.1 Significance of being a Corridor of Highest Significance

Improvements to specific corridors serving particular economic sectors can improve Michigan's economic competitiveness. A corridor-based analysis allows for the development of a vision with specific goals for achieving the vision within the area. An examination of the areas allows MDOT to pinpoint any bottlenecks, gaps, or obstacles and to identify remedies, in order to provide functional and efficient movements throughout the transportation network.

It follows that improvements to specific corridors serving particular economic sectors can improve Michigan's economic competitiveness. These beliefs are confirmed based on the study findings of this report, through the corridor profiles in the *MI Corridors of Highest Significance Profile – Executive Report I* and *Economic Regions Corridor Summaries – Executive Report II*.

**Chapter 3** presents and discusses how MDOT will treat the Corridors of Highest Significance differently from the other corridors in the state. It includes recommendations for establishing specific policies to guide the management, operations, and investment decisions relative to transportation facilities within *MI Transportation Plan* Corridors of Highest Significance. These concepts will be evaluated individually and in conjunction with a comprehensive review of the corridor profiles.

### 6.2 Performance Measures

**Chapter 4** identifies performance measures that are available to be used to evaluate the Corridors of Highest Significance. These corridor measures are a subset of, and consistent with, the performance measures used for *MI Transportation Plan*. The measures evaluate the objectives and desired system characteristics which were articulated during the plan development process by the public, EAG, MDOT leadership, and MDOT staff. A performance measure analysis was not conducted on the Corridors of Highest Significance as part of this report. This performance evaluation is critical as part of understanding and quantitatively comparing the conditions and need for each corridor. Evaluating performance of the Corridors of Highest Significance will be one of the first step's MDOT takes to implement *MI Transportation Plan*.

## 6.3 Strategies, Policies, and Programs

A number of issues and corridor conditions (such as congestion, aging infrastructure, need for modernization, additional support for public transit, etc.) are repeatedly identified in multiple corridor profiles and are identified as barriers to economic growth and competitiveness. A number of similar strategies are recommended in multiple corridors to address these issues.

A comprehensive set of strategies, policies, and programs are presented in the *MI Corridors of Highest Significance Profile Summary – Executive Summary I* and further detailed in **Appendix D**. The strategies presented are consistent with MDOT policy, the *MI Transportation Plan* vision and are compatible with the political environment and structure of Michigan. As appropriate, MDOT will seek to further develop specific corridor focused strategies and programs from the listings in **Appendix D**.

## 6.4 Corridor Plans

Finally, MDOT will develop in-depth corridor studies/corridor plans for strategic Corridors of Highest Significance that have immediate or near-term system preservation needs. These studies will identify the primary industrial sectors supported by the corridor and identify their industry-specific transportation needs. The plans will present a detailed set of programs, policies, and projects needed to improve the economic competitiveness of each corridor. The plans will address corridor opportunities, freight adequacy, barriers, gaps, and missing links. The plans will also seek to develop a prioritized list of projects, ideas and programs needed for funding and partnerships, while addressing both financial and operational needs for each corridor.